

PREFACE

This supplement contains amendments to the environmental regulations adopted during the 4th quarter of 2008 (October - December).

The amendments in this publication include the following:

Media	Rule Log #	Final Date
Part III. Air	AQ282	December 20, 2008
	AQ291	November 20, 2008
Part V. Hazardous Waste	HW103ft	November 20, 2008
	HW104ft	November 20, 2008
Part IX. Underground Storage Tanks	UT014	October 20, 2008
Part XV. Radiation Protection	RP048ft	October 20, 2008
	RP048ft repromulgation	November 20, 2008
	RP050ft	October 20, 2008

Log # Suffix Key:

- ft – Fast-Track Rule - Federal regulations promulgated in accordance with expedited procedures in R.S. 49:953(F)(3)
- F – Federal Language
- L – Louisiana Language
- S – Substantive Changes to Proposed Rule
- P – Rule resulting from a Petition for Rulemaking

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Title 33
ENVIRONMENTAL QUALITY

Part XV. Radiation Protection

**Chapter 4. Standards for Protection
against Radiation**

**Subchapter G. Precautionary
Procedures**

§455. Procedures for Receiving and Opening Packages

A. Each licensee or registrant who expects to receive a package containing quantities of radioactive material in excess of a *Type A quantity*, as defined in LAC 33:XV.1503, shall make arrangements to receive:

A.1. – B.1. ...

2. monitor the external surfaces of a labeled⁵ package for radiation levels unless the *package* contains quantities of *radioactive material* that are less than or equal to the *Type A quantity*, as defined in LAC 33:XV.1503; and

B.3. – C. ...

D. The licensee or registrant shall immediately notify the final delivery carrier and, by telephone and telegram, mailgram, or facsimile, the Office of Environmental Compliance at (225) 765-0160 when:

1. removable radioactive surface contamination exceeds the limits of LAC 33:XV.1516.A.9; or

2. external radiation levels exceed the limits of LAC 33:XV.1516.A.10.

E. – F. ...

⁵Labeled with a Radioactive White I, Yellow II or Yellow III label as specified in U.S. Department of Transportation regulations 49 CFR 172.403 and 172.436-440.

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 19:1421 (November 1993), LR 22:973 (October 1996), amended by the Office of Environmental Assessment, Environmental Planning Division, LR 26:2577 (November 2000), LR 28:1951 (September 2002), amended by the Office of the Secretary, Legal Affairs Division, LR 34:2103 (October 2008).

**Chapter 7. Use of Radionuclides in
the Healing Arts**

§763. Training

A. – K.2. ...

a. has completed 700 hours in a structured educational program consisting of both:

i. 200 hours of classroom and laboratory training in the following areas:

K.2.a.i.(a). – M. ...

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 18:34 (January 1992), amended LR 24:2106 (November 1998), amended by the Office of Environmental Assessment, Environmental Planning Division, LR 26:2590 (November 2000), LR 30:1186 (June 2004), amended by the Office of Environmental Assessment, LR 31:1061 (May 2005), amended by the Office of the Secretary, Legal Affairs Division, LR 32:814 (May 2006), LR 34:983 (June 2008), LR 34:2121 (October 2008).

**Chapter 15. Transportation of
Radioactive Material**

§1501. Purpose

A. The regulations in this Chapter establish requirements for packaging, preparation for shipment, and transportation of radioactive material.

B. The packaging and transport of radioactive material are also subject to other Chapters of LAC 33:XV (such as LAC 33:XV.Chapters 3 and 4), and to the regulations of other agencies (such as the United States Department of Transportation (U.S. DOT)) and the United States Postal Service) having jurisdiction over means of transport. The requirements of this Chapter are in addition to, and not in substitution for, other requirements.

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

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Nuclear Energy Division, LR 13:569 (October 1987), amended by the Office of the Secretary, Legal Affairs Division, LR 34:2103 (October 2008).

§1502. Scope

NOTE: Former Subsections B-D have moved to §1504.

A. The regulations in this Chapter apply to any specific or general licensee authorized to receive, possess, use, or transfer radioactive material, if the licensee delivers that material to a carrier for transport, transports the material outside the site of usage as specified in the license, or transports that material on public highways. No provision in this Chapter authorizes possession of radioactive material.

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 Environmental Assessment, Environmental Planning Division, LR 26:1265 (June 2000), LR 26:2771 (December 2000), LR 27:1238 (August 2001), amended by the Office of the Secretary, Legal Affairs Division, LR 34:2103 (October 2008).

§1503. Definitions

A. As used in this Chapter, the following definitions apply.

A₁—the maximum activity of special form radioactive material permitted in a Type A package. This value is listed in 10 CFR Part 71, Appendix A, Table A-1, A-2, A-3, or A-4, incorporated by reference in LAC 33:XV.1599.A, or may be derived in accordance with the procedure prescribed in LAC 33:XV.1599.B-F.

A₂—the maximum activity of radioactive material, other than special form, low specific activity (LSA), and surface contaminated object (SCO) material, permitted in a Type A package. This value is listed in 10 CFR Part 71, Appendix A, Table A-1, A-2, A-3, or A-4, incorporated by reference in LAC 33:XV.1599.A, or may be derived in accordance with the procedure prescribed in LAC 33:XV.1599.B-F.

Carrier—a person engaged in the transportation of passengers or property by land or water as a common, contract, or private carrier, or by civil aircraft.

Certificate Holder—a person who has been issued a certificate of compliance or other package approval by the U.S. NRC.

Certificate of Compliance (CoC)—the certificate issued by the U.S. NRC that approves the design of a package for the transportation of radioactive material.

Close Reflection by Water—immediate contact by water of sufficient thickness for maximum reflection of neutrons.

Consignment—each shipment of a package or groups of packages or load of radioactive material offered by a shipper for transport.

Containment System—the assembly of components of the packaging intended to retain the radioactive material during transport.

Conveyance—for transport by public highway or rail, any transport vehicle or large freight container; for transport by water, any vessel, or any hold, compartment, or defined deck area of a vessel, including any transport vehicle on board the vessel; and for transport by aircraft, any aircraft.

Criticality Safety Index (CSI)—the dimensionless number (rounded up to the first decimal place) assigned to and placed on the label of a fissile material package, to designate the degree of control accumulation of packages containing fissile material during transportation. Determination of the *criticality safety index* is described in LAC 33:XV.1511 and 1512 and in 10 CFR 71.59.

Deuterium—for the purposes of LAC 33:XV.1505.C and 1511, *deuterium* and any *deuterium* compound, including heavy water, in which the ratio of deuterium atoms to hydrogen atoms exceeds 1:5000.

Exclusive Use—the sole use by a single consignor of a conveyance for which all initial, intermediate, and final loading and unloading are carried out in accordance with the direction of the consignor or consignee. The consignor and

the carrier must ensure that any loading or unloading is performed by personnel having radiological training and resources appropriate for safe handling of the consignment. The consignor must issue specific instructions, in writing, for maintenance of exclusive use shipment controls, and include them with the shipping paper information provided to the carrier by the consignor.

Fissile Material—the radionuclides plutonium-239, plutonium-241, uranium-233, uranium-235, or any combination of these radionuclides. *Fissile material* means the fissile nuclides themselves, not material containing fissile nuclides. Unirradiated natural uranium and depleted uranium, and natural uranium or depleted uranium that has been irradiated in thermal reactors only, are not included in this definition. Certain exclusions from *fissile material* controls are provided in LAC 33:XV.1505.C.

Graphite—for the purposes of LAC 33:XV.1505.C and 1511, graphite with a boron equivalent content less than 5 parts per million and density greater than 1.5 grams per cubic centimeter.

Licensed Material—byproduct, source, or special nuclear material that is received, possessed, used, or transferred under a general or specific license issued by the department in accordance with this Chapter.

Low Specific Activity (LSA) Material—radioactive material with limited specific activity that is nonfissile or that is excepted under LAC 33:XV.1505.C, and that satisfies the descriptions and limits set forth below. Shielding materials surrounding the *LSA material* may not be considered in determining the estimated average specific activity of the package contents. *LSA material* must be in one of three groups:

a. LSA-I:

i. uranium and thorium ores, concentrates of uranium and thorium ores, and other ores containing naturally occurring radioactive radionuclides that are not intended to be processed for the use of these radionuclides;

ii. solid unirradiated natural uranium, depleted uranium, natural thorium, or their solid or liquid compounds or mixtures;

iii. radioactive material for which the A_2 value is unlimited; or

iv. other radioactive material in which the activity is distributed throughout and the estimated average specific activity does not exceed 30 times the value for exempt material activity concentration determined in accordance with LAC 33:XV.1599.E.

b. LSA-II:

i. water with tritium concentration up to 0.8 TBq/liter (20.0 Ci/liter); or

ii. other material in which the activity is distributed throughout, and the average specific activity does not exceed 10^{-4} A_2/g for solids and gases, and 10^{-5} A_2/g for liquids.

c. LSA-III. Solids (e.g., consolidated wastes, activated materials), excluding powders, that satisfy the requirements of 10 CFR 71.77, in which:

i. the radioactive material is distributed throughout a solid or a collection of solid objects or is essentially uniformly distributed in a solid compact binding agent (e. g., concrete, bitumen, ceramic, etc.);

ii. the radioactive material is relatively insoluble, or it is intrinsically contained in a relatively insoluble material, so that, even under loss of packaging, the loss of radioactive material per package by leaching, when placed in water for seven days, would not exceed 0.1 A₂; and

iii. the estimated average specific activity of the solid does not exceed 2×10^{-3} A₂/g.

Low Toxicity Alpha Emitters—natural uranium, depleted uranium, and natural thorium; uranium-235, uranium-238, thorium-232, thorium-228, or thorium-230 when contained in ores or physical or chemical concentrates or tailings; or alpha emitters with a half-life of less than 10 days.

Maximum Normal Operating Pressure—the maximum gauge pressure that would develop in the containment system in a period of one year under the heat condition specified in 10 CFR 71.71(c)(1), in the absence of venting, external cooling by an ancillary system, or operational controls during transport.

Natural Thorium—thorium with the naturally occurring distribution of thorium isotopes (essentially 100 weight percent thorium-232).

Normal Form Radioactive Material—radioactive material which has not been demonstrated to qualify as special form radioactive material.

Optimum Interspersed Hydrogenous Moderation—the presence of hydrogenous material between packages to such an extent that the maximum nuclear reactivity results.

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

a. *Fissile Material Package, Type AF Package, Type BF Package, Type B(U)F Package, or Type B(M)F Package*—a fissile material packaging together with its fissile material contents.

b. *Type A Package*—a Type A packaging together with its radioactive contents. A *Type A package* is defined and must comply with the U.S. DOT regulations in 49 CFR Part 173.

c. *Type B Package*—a Type B packaging together with its radioactive contents. On approval, a *Type B package* design is designated by the NRC as B(U) unless the package has a maximum normal operating pressure of more than 700 kPa (100 lb/in²) gauge or a pressure relief device that would allow the release of radioactive material to the environment under the tests specified in 10 CFR 71.73 (hypothetical accident conditions), in which case it will receive a designation B(M). B(U) refers to the need for unilateral approval of international shipments; B(M) refers

to the need for multilateral approval of international shipments. There is no distinction made in how packages with these designations may be used in domestic transportation. To determine their distinction for international transportation, see U.S. DOT regulations in 49 CFR Part 173. A *Type B package* approved before September 6, 1983, was designated only as Type B. Limitations on its use are specified in 10 CFR 71.19.

Packaging—the assembly of components necessary to ensure compliance with the packaging requirements of this Chapter. It may consist of one or more receptacles, absorbent materials, spacing structures, thermal insulation, radiation shielding, and devices for cooling or absorbing mechanical shocks. The vehicle, tie-down system, and auxiliary equipment may be designated as part of the packaging.

Regulations of the U.S. Department of Transportation—the regulations in 49 CFR Parts 100-189.

Special Form Radioactive Material—radioactive material that satisfies the following conditions:

a. it is either a single solid piece or is contained in a sealed capsule that can be opened only by destroying the capsule;

b. the piece or capsule has at least one dimension not less than 5 millimeters (0.197 inch); and

c. it satisfies the test requirements of 10 CFR 71.75. A special form encapsulation designed in accordance with the requirements of 10 CFR 71.4 in effect on June 30, 1983 (see 10 CFR Part 71, revised as of January 1, 1983), and constructed prior to July 1, 1985, and a special form encapsulation designed in accordance with the requirements of 10 CFR 71.4 in effect on March 31, 1996 (see 10 CFR Part 71, revised as of January 1, 1983), and constructed before April 1, 1998, may continue to be used. Any other special form encapsulation must meet the specifications of this definition.

Specific Activity of a Radionuclide—the radioactivity of the radionuclide per unit mass of that nuclide. The specific activity of a material in which the radionuclide is essentially uniformly distributed is the radioactivity per unit mass of the material.

Spent Nuclear Fuel or Spent Fuel—fuel that has been withdrawn from a nuclear reactor following irradiation, has undergone at least one year's decay since being used as a source of energy in a power reactor, and has not been chemically separated into its constituent elements by reprocessing. Spent fuel includes the special nuclear material, byproduct material, source material, and other radioactive materials associated with fuel assemblies.

State—a State of the United States, or the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, American Samoa, or the Commonwealth of the Northern Mariana Islands.

Surface Contaminated Object (SCO)—a solid object that is not itself classed as radioactive material, but which has radioactive material distributed on any of its surfaces.

SCOs must be in one of two groups with surface activity not exceeding the following limits:

a. SCO-I. A solid object on which:

i. the non-fixed contamination on the accessible surface averaged over 300 cm² (or the area of the surface if less than 300 cm²) does not exceed 4 Bq/cm² (10⁻⁴ microcurie/cm²) for beta and gamma and low toxicity alpha emitters, or 0.4 Bq/cm² (10⁻⁵ microcurie/cm²) for all other alpha emitters;

ii. the fixed contamination on the accessible surface averaged over 300 cm² (or the area of the surface if less than 300 cm²) does not exceed 4x10⁴ Bq/cm² (1.0 microcurie/cm²) for beta and gamma and low toxicity alpha emitters, or 4x10³ Bq/cm² (0.1 microcurie/cm²) for all other alpha emitters; and

iii. the non-fixed contamination plus the fixed contamination on the inaccessible surface averaged over 300 cm² (or the area of the surface if less than 300 cm²) does not exceed 4x10⁴ Bq/cm² (1 microcurie/cm²) for beta and gamma and low toxicity alpha emitters, or 4x10³ Bq/cm² (0.1 microcurie/cm²) for all other alpha emitters.

b. SCO-II. A solid object on which the limits for SCO-I are exceeded and on which:

i. the non-fixed contamination on the accessible surface averaged over 300 cm² (or the area of the surface if less than 300 cm²) does not exceed 400 Bq/cm² (10⁻² microcurie/cm²) for beta and gamma and low toxicity alpha emitters or 40 Bq/cm² (10⁻³ microcurie/cm²) for all other alpha emitters;

ii. the fixed contamination on the accessible surface averaged over 300 cm² (or the area of the surface if less than 300 cm²) does not exceed 8x10⁵ Bq/cm² (20 microcuries/cm²) for beta and gamma and low toxicity alpha emitters or 8x10⁴ Bq/cm² (2 microcuries/cm²) for all other alpha emitters; and

iii. the non-fixed contamination plus the fixed contamination on the inaccessible surface averaged over 300 cm² (or the area of the surface if less than 300 cm²) does not exceed 8x10⁵ Bq/cm² (20 microcuries/cm²) for beta and gamma and low toxicity alpha emitters, or 8x10⁴ Bq/cm² (2 microcuries/cm²) for all other alpha emitters.

Transport Index—the dimensionless number (rounded up to the first decimal place) placed on the label of a package to designate the degree of control to be exercised by the carrier during transportation. The *transport index* is the number determined by multiplying the maximum radiation level in millisievert (mSv) per hour at 1 meter (3.3 ft) from the external surface of the package by 100, and is equivalent to the maximum radiation level in millirem per hour at 1 meter (3.3 ft).

Type A Quantity—a quantity of radioactive material, the aggregate radioactivity of which does not exceed A₁ for special form radioactive material, or A₂, for normal form radioactive material, where A₁ and A₂ are given in Table A-1 of 10 CFR Part 71, Appendix A, incorporated by reference in

LAC 33:XV.1599.A, or may be determined by procedures described in LAC 33:XV.1599.E.

Type B Quantity—a quantity of radioactive material greater than a Type A quantity.

Unirradiated Uranium—uranium containing not more than 2 x 10³ Bq of plutonium per gram of uranium-235, not more than 9 x 10⁶ Bq of fission products per gram of uranium-235, and not more than 5 x 10⁻³ grams of uranium-236 per gram of uranium-235.

Uranium: Natural, Depleted, Enriched—

a. *Natural Uranium*—uranium with the naturally occurring distribution of uranium isotopes (approximately 0.711 weight percent uranium-235, and the remainder by weight essentially uranium-238).

b. *Depleted Uranium*—uranium containing less uranium-235 than the naturally occurring distribution of uranium isotopes.

c. *Enriched Uranium*—uranium containing more uranium-235 than the naturally occurring distribution of uranium isotopes.

U.S. DOT—the U.S. Department of Transportation.

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 Environmental Assessment, Environmental Planning Division, LR 26:1265 (June 2000), amended by the Office of Environmental Assessment, LR 31:55 (January 2005), amended by the Office of the Secretary, Legal Affairs Division, LR 34:2103 (October 2008).

§1504. Requirements for the Transportation of Radioactive Material

[Formerly Subsections C-E existed in §1502.]

A. Except as authorized in a general or specific license issued by the department, or as exempted in accordance with this Chapter, no licensee may transport radioactive material or deliver radioactive material to a carrier for transport.

B. Each licensee who transports licensed material outside the site of usage, as specified in the license, or transports licensed material on public highways, or delivers licensed material to a carrier for transport, shall comply with the applicable requirements of the U.S. DOT regulations in 49 CFR Parts 107, 171-180, and 390-397, appropriate to the mode of transport.

C. The licensee shall particularly note U.S. DOT regulations in the following areas:

1. packaging—49 CFR Part 173, Subparts A, B, and I;
2. marking and labeling—49 CFR Part 172, Subpart D, Paragraphs 172.400-172.407 and 172.436-172.441 of Subpart E;

3. placarding—49 CFR Part 172, Subpart F, in particular Paragraphs 172.500-172.519, 172.556; and Appendices B and C;

4. shipping papers and emergency information—49 CFR Part 172, Subparts C and G;

5. accident reporting—49 CFR 171.15 and 171.16;

6. hazardous material shipper/carrier registration—49 CFR Part 107, Subpart G;

7. hazardous material employee training—49 CFR Part 172, Subpart H; and

8. security plans—49 CFR Part 172, Subpart I.

D. The licensee shall also note U.S. DOT regulations pertaining to the following modes of transportation:

1. rail—49 CFR Part 174, Subparts A-D and K;

2. air—49 CFR Part 175;

3. vessel—49 CFR Part 176, Subparts A-F and M; and

4. public highway—49 CFR Part 177 and Parts 390-397.

E. 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 B 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 and approved by the department.

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 Environmental Assessment, Environmental Planning Division, LR 26:2602 (November 2000), amended by the Office of the Secretary, Legal Affairs Division, LR 34:2106 (October 2008).

§1505. Exemptions

A. Any physician licensed by the state of Louisiana to dispense drugs in the practice of medicine is exempt from LAC 33:XV.1504 with respect to transport by the physician of licensed material for use in the practice of medicine. However, any physician operating under this exemption must be licensed under LAC 33:XV.Chapter 7.

B. A licensee is exempt from all the requirements of this Chapter with respect to shipment or carriage of the following low-level materials:

1. natural material and ores containing naturally occurring radionuclides that are not intended to be processed for use of these radionuclides, provided the activity concentration of the material does not exceed 10 times the values specified in Table A-2 of 10 CFR Part 71, Appendix A, incorporated by reference in LAC 33:XV.1599.A; and

2. materials for which the activity concentration is not greater than the activity concentration values specified in Table A-2 of 10 CFR Part 71, Appendix A, incorporated by reference in LAC 33:XV.1599.A, or for which the consignment activity is not greater than the limit for an exempt consignment found in Table A-2 of 10 CFR Part 71, Appendix A, incorporated by reference in LAC 33:XV.1599.A.

C. Fissile material meeting at least one of the following requirements is exempt from classification as fissile material and from the fissile material package standards of 10 CFR 71.55 and 71.59, but is subject to all other requirements of this Chapter, except as noted:

1. an individual package containing 2 grams or less of fissile material;

2. individual or bulk packaging containing 15 grams or less of fissile material provided the package has at least 200 grams of solid nonfissile material for every gram of fissile material. Lead, beryllium, graphite, and hydrogenous material enriched in deuterium may be present in the package, but must not be included in determining the required mass for solid nonfissile material;

3. low concentrations of solid fissile material commingled with solid nonfissile material, provided that there is at least 2000 grams of solid nonfissile material for every gram of fissile material, and there is no more than 180 grams of fissile material distributed within 360 kg of contiguous nonfissile material. Lead, beryllium, graphite, and hydrogenous material enriched in deuterium may be present in the package, but must not be included in determining the required mass of solid nonfissile material;

4. uranium enriched in uranium-235 to a maximum of 1 percent by weight, and with total plutonium and uranium-233 content of up to 1 percent of the mass of uranium-235, provided that the mass of any beryllium, graphite, and hydrogenous material enriched in deuterium constitutes less than 5 percent of the uranium mass;

5. liquid solutions of uranyl nitrate enriched in uranium-235 to a maximum of 2 percent by mass, with a total plutonium and uranium-233 content not exceeding 0.002 percent of the mass of uranium, and with a minimum nitrogen to uranium atomic ratio (N/U) of 2. The material must be contained in at least a U.S. DOT Type A package; and

6. packages containing, individually, a total plutonium mass of not more than 1000 grams, of which not more than 20 percent by mass may consist of plutonium-239, plutonium-241, or any combination of these radionuclides.

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 Environmental Assessment, LR 31:55 (January 2005), amended by the Office of the Secretary, Legal Affairs Division, LR 34:2106 (October 2008).

§1506. Deliberate Misconduct

NOTE: Former §1506 has been repealed.

A. This Section applies to any:

1. licensee;
2. certificate holder;
3. quality assurance program approval holder;
4. applicant for a license, certificate, or quality assurance program approval;
5. contractor (including a supplier or consultant) or subcontractor, to any person identified in Paragraph A.4 of this Section; or
6. employee of any person identified in Paragraph A.1, 2, 3, 4, or 5 of this Section.

B. A person identified in Subsection A of this Section who knowingly provides to any person listed in Paragraph A.1, 2, 3, 4, or 5 of this Section any component, material, or other goods or services that relate to a licensee's, a certificate holder's, a quality assurance program approval holder's, or an applicant's activities subject to this Chapter may not:

1. engage in deliberate misconduct that causes, or would have caused if not detected, a licensee, a certificate holder, a quality assurance program approval holder, or any applicant to be in violation of any rule, regulation, or order, or of any term, condition, or limitation of any license, certificate, or approval issued by the department; or

2. deliberately submit to the department, or to a licensee, a certificate holder, a quality assurance program approval holder, an applicant for a license, certificate, or quality assurance program approval, or a licensee's, an applicant's, a certificate holder's, or a quality assurance program approval holder's contractor or subcontractor, information that the person submitting the information knows to be incomplete or inaccurate in some respect.

C. A person who violates Subsection B of this Section may be subject to enforcement action in accordance with the procedures in LAC 33:XV.108.

D. For the purposes of Paragraph B.1 of this Section, *deliberate misconduct* by a person means an intentional act or omission that the person knows:

1. would cause a licensee, a certificate holder, a quality assurance program approval holder, or an applicant for a license, certificate, or quality assurance program approval to be in violation of any rule, regulation, or order, or of any term, condition, or limitation of any license or certificate issued by the department; or

2. constitutes a violation of a requirement, procedure, instruction, contract, purchase order, or policy of a licensee, a certificate holder, a quality assurance program approval holder, an applicant, or the contractor or subcontractor of any of them.

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 34:2107 (October 2008).

§1507. General Licenses for Carriers

Repealed.

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 Environmental Assessment, Environmental Planning Division, LR 26:2602 (November 2000), repealed by the Office of the Secretary, Legal Affairs Division, LR 34:2107 (October 2008).

§1508. General License: NRC Approved Packages

A. A general license is issued to transport, or to deliver to a carrier for transport, licensed material in a package for which a license, certificate of compliance (CoC), or other approval has been issued by the department.

B. This general license applies only to a licensee who:

1. has a quality assurance program approved by the department as satisfying the provisions of 10 CFR Part 71, Subpart H;

2. has a copy of the specific license, certificate of compliance, or other approval of the package and has the drawings and other documents referenced in the approval relating to the use and maintenance of the packaging and to the actions to be taken prior to shipment;

3. complies with the terms and conditions of the license, certificate, or other approval, as applicable, and the applicable requirements of this Chapter; and

4. prior to the licensee's first use of the package, has registered with the U.S. NRC.

C. The general license in this Section applies only when the package approval authorizes use of the package under this general license.

D. For a Type B or fissile material package, the design of which was approved by the U.S. NRC before April 1, 1996, the general license is subject to additional restrictions of 10 CFR 71.19.

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 Environmental Assessment, Environmental Planning Division, LR 26:1267 (June 2000), amended by the Office of the Secretary, Legal Affairs Division, LR 34:2107 (October 2008).

§1509. General License: DOT Specification Container

[Formerly §1510]

NOTE: Former §1509 has been repealed.

A. A general license is issued to any licensee of the department to transport, or to deliver to a carrier for

transport, licensed material in a specification container for fissile material or for a Type B quantity of radioactive material as specified in the regulations of the U.S. DOT at 49 CFR Parts 173 and 178.

B. This general license applies only to a licensee who has a quality assurance program approved by the U.S. NRC as satisfying the provisions of 10 CFR Part 71, Subpart H.

C. This general license applies only to a licensee who:

1. has a copy of the specification; and
2. complies with the terms and conditions of the specification and the applicable requirements of this Chapter and of 10 CFR Part 71, Subparts A, G, and H.

D. This general license is subject to the limitation that the specification container may not be used for a shipment to a location outside the United States, except by multilateral approval, as defined in U.S. DOT regulations at 49 CFR 173.403.

E. This Section expires October 1, 2008.

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 Environmental Assessment, Environmental Planning Division, LR 26:1268 (June 2000), amended by the Office of the Secretary, Legal Affairs Division, LR 34:2107 (October 2008).

§1510. General License: Use of Foreign Approved Package

[Formerly §1511]

NOTE: Former §1510 has moved to §1509.

A. A general license is issued to any licensee of the department to transport, or to deliver to a carrier for transport, licensed material in a package the design of which has been approved in a foreign national competent authority certificate that has been revalidated by the U.S. DOT as meeting the applicable requirements of 49 CFR 171.12.

B. Except as otherwise provided in this Section, the general license applies only to a licensee who has a quality assurance program approved by the U.S. NRC as satisfying the applicable provisions of 10 CFR Part 71, Subpart H.

C. This general license applies only to shipments made to or from locations outside the United States.

D. This general license applies only to a licensee who:

1. has a copy of the applicable certificate, the revalidation, and the drawings and other documents referenced in the certificate relating to the use and maintenance of the packaging and to the actions to be taken prior to shipment; and

2. complies with the terms and conditions of the certificate and revalidation and with the applicable requirements of this Chapter and of 10 CFR Part 71, Subparts A, G, and H. With respect to the quality assurance

provisions of 10 CFR Part 71, Subpart H, the licensee is exempt from design, construction, and fabrication considerations.

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 Environmental Assessment, Environmental Planning Division, LR 26:1268 (June 2000), amended by the Office of the Secretary, Legal Affairs Division, LR 34:2108 (October 2008).

§1511. General License: Fissile Material

NOTE: Former §1511 has moved to §1510.

A. A general license is issued to any licensee of the department to transport fissile material, or to deliver fissile material to a carrier for transport, if the material is shipped in accordance with this Section. The fissile material need not be contained in a package that meets the standards of LAC 33:XV.1513; however, the material must be contained in a Type A package. The Type A package must also meet the U.S. DOT requirements of 49 CFR 173.417(a).

B. The general license applies only to a licensee who has a quality assurance program approved by the U.S. NRC as satisfying the provisions of 10 CFR Part 71, Subpart H.

C. The general license applies only when a package's contents:

1. contain no more than a Type A quantity of radioactive material; and
2. contain less than 500 total grams of beryllium, graphite, or hydrogenous material enriched in deuterium.

D. The general license applies only to packages containing fissile material that are labeled with a criticality safety index (CSI) that:

1. has been determined in accordance with Subsection E of this Section;
2. has a value less than or equal to 10; and
3. for a shipment of multiple packages containing fissile material, the sum of the CSIs is less than or equal to 50, for shipment on a nonexclusive use conveyance, or less than or equal to 100, for shipment on an exclusive use conveyance.

E. The following requirements must be met when determining the CSI.

1. The value for the CSI must be greater than or equal to the number calculated by the following equation.

$$CSI = 10 \left[\frac{\text{grams of } ^{235}\text{U}}{X} + \frac{\text{grams of } ^{233}\text{U}}{Y} + \frac{\text{grams of Pu}}{Z} \right]$$

2. The calculated CSI must be rounded up to the first decimal place.

3. The values of X, Y, and Z used in the CSI equation must be taken from Tables 1 or 2 of this Section, as appropriate.

4. If Table 2 of this Section is used to obtain the value of X, then the values for the terms in the equation for uranium-233 and plutonium must be assumed to be zero.

5. Table 1 values for X, Y, and Z must be used to determine the CSI if:

- a. uranium-233 is present in the package;
- b. the mass of plutonium exceeds 1 percent of the mass of uranium-235;
- c. the uranium is of unknown uranium-235 enrichment or greater than 24 weight percent enrichment; or
- d. substances having a moderating effectiveness (i.e., an average hydrogen density greater than H₂O) (e.g., certain hydrocarbon oils or plastics) are present in any form, except as polyethylene used for packing or wrapping.

Table 1 Mass Limits for General License Packages Containing Mixed Quantities of Fissile Material or Uranium-235 of Unknown Enrichment		
Fissile Material	Fissile material mass mixed with moderating substances having an average hydrogen density less than or equal to H ₂ O (grams)	Fissile material mass mixed with moderating substances having an average hydrogen density greater than H ₂ O ^a (grams)
²³⁵ U (X)	60	38
²³³ U (Y)	43	27
²³⁹ Pu or ²⁴¹ Pu (Z)	37	24

^aWhen mixtures of moderating substances are present, the lower mass limits shall be used if more than 15 percent of the moderating substance has an average hydrogen density greater than H₂O.

Table 2 Mass Limits for General License Packages Containing Uranium-235 of Known Enrichment	
Uranium enrichment in weight percent of ²³⁵ U, not exceeding	Fissile material mass of ²³⁵ U (X) (grams)
24	60
20	63
15	67
11	72
10	76
9.5	78
9	81
8.5	82
8	85
7.5	88
7	90
6.5	93
6	97
5.5	102
5	108
4.5	114
4	120
3.5	132
3	150
2.5	180
2	246
1.5	408
1.35	480
1	1,020
0.92	1,800

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 34:2108 (October 2008).

§1512. General License: Plutonium-Beryllium Special Form Material

NOTE: Former §1512 has moved to §1515 and §1516.

A. A general license is issued to any licensee of the department to transport fissile material in the form of plutonium-beryllium (Pu-Be) special form sealed sources, or to deliver Pu-Be sealed sources to a carrier for transport, if the material is shipped in accordance with this Section. This material need not be contained in a package that meets the standards of LAC 33:XV.1513; however, the material must

be contained in a Type A package. The Type A package must also meet the U.S. DOT requirements of 49 CFR 173.417(a).

B. The general license applies only to a licensee who has a quality assurance program approved by the U.S. NRC as satisfying the provisions of 10 CFR Part 71, Subpart H.

C. The general license applies only when a package's contents:

1. contain no more than a Type A quantity of radioactive material; and

2. contain less than 1000 grams of plutonium, provided that plutonium-239, plutonium-241, or any combination of these radionuclides, constitutes less than 240 grams of the total quantity of plutonium in the package.

D. The general license applies only to packages labeled with a CSI that:

1. has been determined in accordance with Subsection E of this Section;

2. has a value less than or equal to 100; and

3. for a shipment of multiple packages containing Pu-Be sealed sources, the sum of the CSIs is less than or equal to 50, for shipment on a nonexclusive use conveyance, or less than or equal to 100, for shipment on an exclusive use conveyance.

E. The following requirements must be met when determining the CSI.

1. The value for the CSI must be greater than or equal to the number calculated by the following equation.

$$CSI = 10 \left[\frac{\text{grams of } ^{239}\text{Pu} + \text{grams of } ^{241}\text{Pu}}{24} \right]$$

2. The calculated CSI must be rounded up to the first decimal place.

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 34:2109 (October 2008).

§1513. External Radiation Standards for all Packages

NOTE: Former §1513 has moved to §1517.

A. Except as provided in Subsection B of this Section, each package of radioactive materials offered for transportation must be designed and prepared for shipment so that under conditions normally incident to transportation the radiation level does not exceed 2 mSv/h (200 mrem/h) at any point on the external surface of the package, and the transport index does not exceed 10.

B. A package that exceeds the radiation level limits specified in Subsection A of this Section must be transported

by exclusive use shipment only, and the radiation levels for such shipment must not exceed the following during transportation:

1. 2 mSv/h (200 mrem/h) on the external surface of the package, unless the following conditions are met, in which case the limit is 10 mSv/h (1000 mrem/h):

a. the shipment is made in a closed transport vehicle;

b. the package is secured within the vehicle so that its position remains fixed during transportation; and

c. there are no loading or unloading operations between the beginning and end of the transportation;

2. 2 mSv/h (200 mrem/h) at any point on the outer surface of the vehicle, including the top and underside of the vehicle, or, in the case of a flat-bed style vehicle, at any point on the vertical planes projecting from the outer edges of the vehicle, on the upper surface of the load or enclosure, if used, and on the lower external surface of the vehicle; and

3. 0.1 mSv/h (10 mrem/h) at any point 2 meters (80 inches) from the outer lateral surfaces of the vehicle (excluding the top and underside of the vehicle), or, in the case of a flat-bed style vehicle, at any point 2 meters (6.6 feet) from the vertical planes projecting from the outer edges of the vehicle (excluding the top and underside of the vehicle); and

4. 0.02 mSv/h (2 mrem/h) in any normally occupied space, except that this provision does not apply to private carriers, if exposed personnel under their control wear radiation dosimetry devices in accordance with LAC 33:XV.431.

C. For shipments made under the provisions of Subsection B of this Section, the shipper shall provide specific written instructions to the carrier for maintenance of the exclusive use shipment controls. The instructions must be included with the shipping paper information.

D. The written instructions required for exclusive use shipments must be sufficient so that, when followed, they will cause the carrier to avoid actions that will unnecessarily delay delivery or unnecessarily result in increased radiation levels or radiation exposures to transport workers or members of the general public.

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 34:2109 (October 2008).

§1514. Assumptions as to Unknown Properties

NOTE: Former §1514 has been repealed.

A. When the isotopic abundance, mass, concentration, degree of irradiation, degree of moderation, or any other pertinent property of fissile material in any package is not known, the licensee shall package the fissile material as if

the unknown property has a credible value that will cause the maximum neutron multiplication.

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 34:2110 (October 2008).

§1515. Preliminary Determinations

[Formerly §1512.A]

NOTE: Former §1515 has been repealed.

A. Before the first use of any packaging for the shipment of licensed material, the licensee shall:

1. ascertain that there are no cracks, pinholes, uncontrolled voids, or other defects that could significantly reduce the effectiveness of the packaging;

2. where the maximum normal operating pressure will exceed 35 kPa (5 lbs/in²) gauge, test the containment system at an internal pressure at least 50 percent higher than the maximum normal operating pressure, to verify the capability of that system to maintain its structural integrity at that pressure; and

3. conspicuously and durably mark the packaging with its model number, serial number, gross weight, and a package identification number assigned by the U.S. NRC. Before applying the model number, the licensee shall determine that the packaging has been fabricated in accordance with the design approved by the U.S. NRC.

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 Environmental Assessment, Environmental Planning Division, LR 26:1268 (June 2000), amended by the Office of the Secretary, Legal Affairs Division, LR 34:2110 (October 2008).

§1516. Routine Determinations

[Formerly §1512.B]

NOTE: Former §1516 has moved to §1519.

A. Prior to each shipment of licensed material, the licensee shall ensure that the package with its contents satisfies the applicable requirements of this Chapter and of the license. The licensee shall verify that:

1. the package is proper for the contents to be shipped;

2. the package is in unimpaired physical condition except for superficial defects such as marks or dents;

3. each closure device of the packaging, including any required gasket, is properly installed and secured and free of defects;

4. any system for containing liquid is adequately sealed and has adequate space or other specified provision for expansion of the liquid;

5. any pressure relief device is operable and set in accordance with written procedures;

6. the package has been loaded and closed in accordance with written procedures;

7. for fissile material, any moderator or neutron absorber, if required, is present and in proper condition;

8. any structural part of the package that could be used to lift or tie down the package during transport is rendered inoperable for that purpose unless it satisfies design requirements specified in 10 CFR 71.45;

9. the level of non-fixed (removable) radioactive contamination on the external surfaces of each package offered for shipment is as low as reasonably achievable and within the limits specified in U.S. DOT regulations at 49 CFR 173.443;

10. external radiation levels around the package and around the vehicle, if applicable, will not exceed the limits specified in LAC 33:XV.1513 at any time during transportation; and

11. accessible package surface temperatures shall not exceed the limits specified in 10 CFR 71.43(g) at any time during transportation.

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 Environmental Assessment, Environmental Planning Division, LR 26:1268 (June 2000), amended by the Office of the Secretary, Legal Affairs Division, LR 34:2110 (October 2008).

§1517. Air Transport of Plutonium

[Formerly §1513]

NOTE: Former §1517 has moved to §1599.A.

A. Notwithstanding the provisions of any general licenses and notwithstanding any exemptions stated directly in this Chapter or included indirectly by citation of 49 CFR Chapter I, as may be applicable, the licensee shall assure that plutonium in any form, whether for import, export, or domestic shipment, is not transported by air or delivered to a carrier for air transport unless:

1. the plutonium is contained in a medical device designed for individual human application;

2. the plutonium is contained in a material in which the specific activity is less than or equal to the activity concentration values for plutonium specified in Table A-2 of 10 CFR Part 71, Appendix A, incorporated by reference in LAC 33:XV.1599.A, and in which the radioactivity is essentially uniformly distributed;

3. the plutonium is shipped in a single package containing not more than an A₂ quantity of plutonium in any isotope or form and is shipped in accordance with LAC 33:XV.1504; or

4. the plutonium is shipped in a package specifically authorized for the shipment of plutonium by air in the Certificate of Compliance for that package issued by the U.S. NRC.

B. Nothing in Subsection A of this Section is to be interpreted as removing or diminishing the requirements of 10 CFR 73.24.

C. For a shipment of plutonium by air that is subject to Paragraph A.4 of this Section, the licensee shall, through special arrangement with the carrier, require compliance with 49 CFR 175.704, U.S. DOT regulations, applicable to the air transport of plutonium.

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 Environmental Assessment, Environmental Planning Division, LR 26:1268 (June 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 through, 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), and the list 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 is also available on request from the Director, Office of State Programs, U.S. Nuclear Regulatory Commission, 11555 Rockville Pike, Washington, DC 20555. In Louisiana, the governor's designee is the Louisiana State Police, 7919 Independence Boulevard, Box 66614 (#A2621), Baton Rouge, LA 70896-6614.

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 must be made in writing to the governor or to the governor's designee and to the Director, Division of Nuclear Security, Office of Nuclear Security and Incident Response, U.S. Nuclear Regulatory Commission, 11555 Rockville Pike, Washington, DC 20555.

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 must reach the office of the governor or the governor'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 is estimated to occur;

5. the destination of the shipment, and the seven-day period during which arrival of the shipment is estimated to occur; and

6. a point of contact, with a telephone number, for current shipment information.

E. A licensee who finds that schedule information previously furnished to the governor or to the governor's designee, in accordance with this Section, will not be met shall telephone a responsible individual in the office of the governor or of the governor's designee and inform that individual of the extent of the delay beyond the schedule originally reported. The licensee shall maintain a record of the name of the individual contacted for three years.

F. Each licensee who cancels an irradiated reactor fuel or nuclear waste shipment for which advance notification has been sent shall send a cancellation notice to the governor or to the governor's designee previously notified, and to the Director, Division of Nuclear Security, Office of Nuclear Security and Incident Response, U.S. Nuclear Regulatory Commission, 11555 Rockville Pike, Washington, DC 20555. The licensee shall state in the notice that it is a cancellation and identify the advance notification that is being canceled. The licensee shall retain a copy of the notice as a record for three years.

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

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Nuclear Energy Division, LR 13:569 (October 1987), amended by the Office of Environmental Assessment, Environmental Planning Division, LR 26:1269 (June 2000), LR 26:2602 (November 2000), amended by the Office of Environmental Assessment, LR 30:2029 (September 2004), amended by the Office of the Secretary, Legal Affairs Division, LR 31:2537 (October 2005), LR 33:2190 (October 2007), LR 34:2111 (October 2008).

§1520. Quality Assurance

A. Quality Assurance Requirements

1. This Section describes quality assurance requirements applying to design, purchase, fabrication, handling, shipping, storing, cleaning, assembly, inspection, testing, operation, maintenance, repair, and modification of components of packaging that are important to safety. As used in this Section, "quality assurance" comprises all those planned and systematic actions necessary to provide adequate confidence that a system or component will perform satisfactorily in service. Quality assurance includes quality control, which comprises those quality assurance actions related to control of the physical characteristics and quality of the material or component in accordance with predetermined requirements. The licensee, certificate holder, and applicant for a CoC are responsible for the quality assurance requirements as they apply to design, fabrication, testing, and modification of packaging. Each licensee is responsible for the quality assurance provision that applies to its use of a packaging for the shipment of licensed

material subject to the quality assurance requirements of this Section.

2. Each licensee, certificate holder, and applicant for a CoC shall establish, maintain, and execute a quality assurance program that satisfies each of the applicable criteria of this Section and that satisfies any specific provisions that are applicable to the licensee's activities, including procurement of packaging. The licensee, certificate holder, and applicant for a CoC shall execute the applicable criteria in a graded approach to an extent that is commensurate with the quality assurance requirement's importance to safety.

3. Before using any package for the shipment of licensed material subject to this Section, each licensee shall obtain U.S. NRC approval of its quality assurance program. Using an appropriate method listed in 10 CFR 71.1(a), each licensee shall file a description of its quality assurance program, including a discussion of which requirements of this Section are applicable and how they will be satisfied, by submitting the description to the Document Control Desk, Director, Spent Fuel Project Office, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, 11555 Rockville Pike, Washington, DC 20555.

4. A U.S. NRC approved quality assurance program that satisfies the applicable criteria of 10 CFR Part 71, Subpart H, 10 CFR Part 50, Appendix B, or 10 CFR Part 72, Subpart G, and that is established, maintained, and executed regarding transport packages, will be accepted as satisfying the requirements of Paragraph A.2 of this Section. Before first use, the licensee, certificate holder, and applicant for a CoC shall notify the U.S. NRC, in accordance with 10 CFR 71.1, of its intent to apply its previously-approved Subpart H, Appendix B, or Subpart G quality assurance program to transportation activities. The licensee, certificate holder, and applicant for a CoC shall identify the program by date of submittal to the U.S. NRC, Docket Number, and date of U.S. NRC approval.

5. A program for transport container inspection and maintenance limited to radiographic exposure devices, source changers, or packages transporting these devices, and meeting the requirements of LAC 33:XV.547.B, is deemed to satisfy the requirements of LAC 33:XV.1507.B and Paragraph A.2 of this Section.

B. Quality Assurance Organization

1. The licensee (or anyone who designs, fabricates, assembles, and tests the package before the package approval is issued), certificate holder, and applicant for a CoC shall be responsible for the establishment and execution of the quality assurance program. The licensee, certificate holder, and applicant for a CoC may delegate to others, such as contractors, agents, or consultants, the work of establishing and executing the quality assurance program, or any part of the quality assurance program, but shall retain responsibility for the program. The delegatable activities include performing the functions associated with attaining quality objectives and the quality assurance functions.

2. The quality assurance functions consist of assuring that an appropriate quality assurance program is established and effectively executed, and verifying, by procedures such as checking, auditing, and inspection, that activities affecting the functions that are important to safety have been correctly performed.

3. The person or organization performing quality assurance functions must be given sufficient authority and organizational freedom to:

- a. identify problems with quality;
- b. initiate, recommend, or provide solutions; and
- c. verify implementation of solutions.

4. A person or organization performing quality assurance functions must report to a management level that assures that the required authority and organizational freedom, including sufficient independence from cost and schedule factors, when opposed to safety considerations, are provided.

5. Because of the many variables involved, such as the number of personnel, the type of activity being performed, and the location(s) where activities are performed, the organizational structure for executing the quality assurance program may take various forms, provided that persons and organizations assigned the quality assurance functions have the required authority and organizational freedom.

6. Irrespective of the organizational structure, any individual assigned the responsibility for assuring effective execution of any portion of the quality assurance program, at any location where activities subject to this Section are being performed, must have direct access to the levels of management necessary to perform this function.

C. Quality Assurance Program

1. The licensee, certificate holder, and applicant for a CoC shall establish, at the earliest practicable time consistent with the schedule for accomplishing the activities, a quality assurance program that complies with the requirements of this Section. The licensee, certificate holder, and applicant for a CoC shall document the quality assurance program by written procedures or instructions and shall carry out the program in accordance with those procedures throughout the period during which the packaging is used. The licensee, certificate holder, and applicant for a CoC shall identify the material and components to be covered by the quality assurance program, the major organizations participating in the program, and the designated functions of these organizations.

2. The licensee, certificate holder, and applicant for a CoC, through a quality assurance program, shall provide control over activities affecting the quality of the identified materials and components to an extent consistent with their importance to safety, and as necessary to assure conformance to the approved design of each individual package used for the shipment of radioactive material. The licensee, certificate holder, and applicant for a CoC shall assure that activities affecting quality are accomplished

under suitably controlled conditions. Controlled conditions include the use of appropriate equipment; suitable environmental conditions for accomplishing the activity, such as adequate cleanliness; and assurance that all prerequisites for the given activity have been satisfied. The licensee, certificate holder, and applicant for a CoC shall take into account the need for special controls, processes, test equipment, tools, and skills to attain the required quality, and the need for verification of quality by inspection and test.

3. The licensee, certificate holder, and applicant for a CoC shall base the requirements and procedures of the quality assurance program on the following considerations concerning the complexity and proposed use of the package and its components:

- a. the impact of malfunction or failure of the item on safety;
- b. the design and fabrication complexity or uniqueness of the item;
- c. the need for special control of, and surveillance over, processes and equipment;
- d. the degree to which functional compliance can be demonstrated by inspection or test; and
- e. the quality history and degree of standardization of the item.

4. The licensee, certificate holder, and applicant for a CoC shall provide for indoctrination and training of personnel performing activities affecting quality, as necessary to assure that suitable proficiency is achieved and maintained. The licensee, certificate holder, and applicant for a CoC shall review the status and adequacy of the quality assurance program at established intervals. Management of other organizations participating in the quality assurance program shall review regularly the status and adequacy of that part of the quality assurance program they are executing.

D. Handling, Storage, and Shipping Control. The licensee, certificate holder, and applicant for a CoC shall establish measures to control, in accordance with instructions, the handling, storage, shipping, cleaning, and preservation of materials and equipment to be used in packaging to prevent damage or deterioration. When necessary for particular products, special protective environments, such as an inert gas atmosphere and specific moisture content and temperature levels, must be specified and provided.

E. Inspection, Test, and Operating Status

1. The licensee, certificate holder, and applicant for a CoC shall establish measures to indicate, by the use of markings such as stamps, tags, labels, or routing cards, or by other suitable means, the status of inspections and tests performed upon individual items of the packaging. These measures must provide for the identification of items that have satisfactorily passed required inspections and tests,

where necessary, to preclude inadvertent bypassing of the inspections and tests.

2. The licensee shall establish measures to identify the operating status of components of the packaging, such as tagging valves and switches, to prevent inadvertent operation.

F. Nonconforming Materials, Parts, or Components. The licensee, certificate holder, and applicant for a CoC shall establish measures to control materials, parts, or components that do not conform to the licensee's requirements in order to prevent their inadvertent use or installation. These measures must include, as appropriate, procedures for identification, documentation, segregation, disposition, and notification to affected organizations. Nonconforming items must be reviewed and accepted, rejected, repaired, or reworked in accordance with documented procedures.

G. Corrective Action. The licensee, certificate holder, and applicant for a CoC shall establish measures to assure that conditions adverse to quality, such as deficiencies, deviations, defective material and equipment, and nonconformances, are promptly identified and corrected. In the case of a significant condition adverse to quality, the measures must assure that the cause of the condition is determined and corrective action is taken to preclude repetition. The identification of the significant condition adverse to quality, the cause of the condition, and the corrective action taken must be documented and reported to appropriate levels of management.

H. Quality Assurance Records. The licensee, certificate holder, and applicant for a CoC shall maintain sufficient written records to describe the activities affecting quality. The records must include the instructions, procedures, and drawings required by 10 CFR 71.111 to prescribe quality assurance activities and must include closely related specifications such as required qualifications of personnel, procedures, and equipment. The records must include instructions or procedures that establish a records retention program that is consistent with applicable regulations and designates factors such as duration, location, and assigned responsibility. The licensee, certificate holder, and applicant for a CoC shall retain these records for three years beyond the date when the licensee, certificate holder, and applicant for a CoC last engaged in the activity for which the quality assurance program was developed. If any portion of the written procedures or instructions is superseded, the licensee, certificate holder, and applicant for a CoC shall retain the superseded material for three years after it is superseded.

I. Audits. The licensee, certificate holder, and applicant for a CoC shall carry out a comprehensive system of planned and periodic audits to verify compliance with all aspects of the quality assurance program and to determine the effectiveness of the program. The audits must be performed in accordance with written procedures or checklists by appropriately trained personnel not having direct responsibilities in the areas being audited. Audited results must be documented and reviewed by management having

responsibility in the area audited. Follow-up action, including re-audit of deficient areas, must be taken where indicated.

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 34:2112 (October 2008), repromulgated LR 34:2393 (November 2008).

§1599. Appendix—Incorporation by Reference of 10 CFR Part 71, Appendix A, Tables A-1, A-2, A-3, and A-4; Procedures for Determining A₁ and A₂

[Formerly §1517]

A. Tables A-1, A-2, A-3, and A-4 in 10 CFR Part 71, Appendix A, January 1, 2007, are hereby incorporated by reference. These tables are used to determine the values of A₁ and A₂, as described in Subsections B-F of this Section.

B. Values of A₁ and A₂ for individual radionuclides, which are the bases for many activity limits elsewhere in these regulations, are given in Table A-1. The curie (Ci) values specified are obtained by converting from the Terabecquerel (TBq) value. The Terabecquerel values are the regulatory standard. The curie values are for information only and are not intended to be the regulatory standard. Where values of A₁ and A₂ are unlimited, the values are for radiation control purposes only. For nuclear criticality safety, some materials are subject to controls placed on fissile material.

C. For individual radionuclides whose identities are known, but which are not listed in Table A-1, the A₁ and A₂ values contained in Table A-3 may be used. Otherwise, the licensee shall obtain prior U.S. NRC approval of the A₁ and A₂ values for radionuclides not listed in Table A-1, before shipping the material. For individual radionuclides whose identities are known, but which are not listed in Table A-2, the exempt material activity concentration and exempt consignment activity values contained in Table A-3 may be used. Otherwise, the licensee shall obtain prior U.S. NRC approval of the exempt material activity concentration and exempt consignment activity values for radionuclides not listed in Table A-2, before shipping the material. The licensee shall submit the requests for prior approval described in this Subsection to the U.S. NRC, in accordance with 10 CFR 71.1.

D. In the calculations of A₁ and A₂ for a radionuclide not in Table A-1, a single radioactive decay chain, in which radionuclides are present in their naturally-occurring proportions, and in which no daughter radionuclide has a half-life either longer than 10 days, or longer than that of the parent radionuclide, shall be considered as a single radionuclide, and the activity to be taken into account, and the A₁ or A₂ value to be applied, shall be those corresponding to the parent radionuclide of that chain. In the case of radioactive decay chains in which any daughter radionuclide has a half-life either longer than 10 days, or greater than that of the parent radionuclide, the parent and

those daughter radionuclides shall be considered as mixtures of different radionuclides.

E. For mixtures of radionuclides whose identities and respective activities are known, the following conditions apply.

1. For special form radioactive material, the maximum quantity that may be transported in a Type A package is as follows.

$$\sum_i \frac{B(i)}{A_1(i)} \leq 1$$

where:

B(i) = the activity of radionuclide I
 A₁(i) = the A₁ value for radionuclide I

2. For normal form radioactive material, the maximum quantity that may be transported in a Type A package is as follows.

$$\frac{\sum B(i)}{A_2(i)} \leq 1$$

where:

B(i) = the activity of radionuclide i
 A₂(i) = the A₂ value for radionuclide i

3. Alternatively, the A₁ value for mixtures of special form material may be determined as follows.

$$A_1 \text{ for mixture} = \frac{1}{\sum_i \frac{f(i)}{A_1(i)}}$$

where:

f(i) = the fraction of activity for radionuclide I in the mixture
 A₁(i) = the appropriate A₁ value for radionuclide I

4. Alternatively, the A₂ value for mixtures of normal form material may be determined as follows.

$$A_2 \text{ for mixture} = \frac{1}{\sum_i \frac{f(i)}{A_2(i)}}$$

where:

f(i) = the fraction of activity for radionuclide I in the mixture
 A₂(i) = the appropriate A₂ value for radionuclide I

$$\text{Exempt activity concentration for mixture} = \frac{1}{\sum_i \frac{f(i)}{[A](i)}}$$

5. The exempt activity concentration for mixtures of nuclides may be determined as follows.

where:

f(i) = the fraction of activity concentration of radionuclide I in the mixture
 [A] = the activity concentration for exempt material containing radionuclide I

$$\text{Exempt consignment activity limit for mixture} = \frac{1}{\sum_i \frac{f(i)}{A(i)}}$$

6. The activity limit for an exempt consignment for mixtures of radionuclides may be determined as follows.

where:

f(i) = the fraction of activity of radionuclide I in the mixture
 A = the activity limit for exempt consignments for radionuclide I

F. When the identity of each radionuclide is known, but the individual activities of some of the radionuclides are not known, the radionuclides may be grouped, and the lowest A₁ or A₂ value, as appropriate, for the radionuclides in each group may be used in applying the formulas in Subsection E. Groups may be based on the total alpha activity and the total beta/gamma activity when these are known, using the lowest A₁ or A₂ values for the alpha emitters and beta/gamma emitters.

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

HISTORICAL NOTE: Promulgated by the Department of Environmental Quality, Office of Environmental Assessment, Environmental Planning Division, LR 26:1270 (June 2000), amended LR 27:2233 (December 2001), LR 28:997 (May 2002), LR 29:701 (May 2003), LR 30:752 (April 2004), amended by the Office of Environmental Assessment, LR 31:920 (April 2005), amended by the Office of the Secretary, Legal Affairs Division, LR 32:604 (April 2006), LR 33:641 (April 2007), LR 34:867 (May 2008), LR 34:2114 (October 2008).