

SUBCHAPTER A: GENERAL PROVISIONS

§336.2. Definitions.

The following words and terms, when used in this chapter, shall have the following meanings, or as described in Chapter 3 of this title (relating to Definitions), unless the context clearly indicates otherwise. Additional definitions used only in a certain subchapter will be found in that subchapter.

(1) 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).

(2) Accelerator-produced radioactive material--Any material made radioactive by a particle accelerator.

(3) Access control--A system for allowing only approved individuals to have unescorted access to the security zone and for ensuring that all other individuals are subject to escorted access.

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

(5) Adult--An individual 18 or more years of age.

(6) Aggregated--Accessible by the breach of a single physical barrier that allows access to radioactive material in any form, including any devices containing the radioactive material, when the total activity equals or exceeds a category 2 quantity of radioactive material.

(7) Agreement state--Any state with which the United States Nuclear Regulatory Commission (NRC) or the Atomic Energy Commission has entered into an effective agreement under the Atomic Energy Act of 1954, §274b, as amended [through October 24, 1992 (Public Law 102-486)]. Non-agreement State means any other State.

(8) Airborne radioactive material--Any radioactive material dispersed in the air in the form of dusts, fumes, particulates, mists, vapors, or gases.

(9) Airborne radioactivity area--A room, enclosure, or area in which airborne radioactive materials, composed wholly or partly of licensed material, exist in concentrations:

(A) in excess of the derived air concentrations (DACs) specified in Table I of §336.359(d) of this title (relating to Appendix B. Annual Limits on Intake (ALI) and Derived Air Concentrations (DAC) of Radionuclides for Occupational Exposure; Effluent Concentrations; Concentrations for Release to Sanitary Sewerage);
or

(B) to 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% of the ALI or 12 DAC-hours.

(10) Air-purifying respirator--A respirator with an air-purifying filter, cartridge, or canister that removes specific air contaminants by passing ambient air through the air-purifying element.

(11) Annual limit on intake (ALI)--The derived limit for the amount of radioactive material taken into the body of an adult worker by inhalation or ingestion in a year. ALI is the smaller value of intake of a given radionuclide in a year by the "reference man" that would result in a committed effective dose equivalent of 5 rems (0.05 sievert) or a committed dose equivalent of 50 rems (0.5 sievert) to any individual organ or tissue. ALI values for intake by ingestion and by inhalation of selected radionuclides are given in Table I, Columns 1 and 2 of §336.359(d) of this title (relating to Appendix B. Annual Limits on Intake (ALI) and Derived Air Concentrations (DAC) of Radionuclides for Occupational Exposure; Effluent Concentrations; Concentrations for Release to Sanitary Sewerage).

(12) Approved individual--An individual whom the licensee has determined to be trustworthy and reliable for unescorted access in accordance with §336.357(b) - (h) of this title (relating to Physical Protection of Category 1 and Category 2 Quantities of Radioactive Material) and who has completed the training required by §336.357(j)(3) of this title.

(13) As low as is reasonably achievable--Making every reasonable effort to maintain exposures to radiation as far below the dose limits in this chapter as is practical, consistent with the purpose for which the licensed activity is undertaken, taking into account the state of technology, the economics of improvements in relation to the state of technology, the economics of improvements in relation to benefits to the public health and safety, and other societal and socioeconomic considerations, and in relation to utilization of ionizing radiation and licensed radioactive materials in the public interest.

(14) Assigned protection factor (APF)--The expected workplace level of respiratory protection that would be provided by a properly functioning respirator or a class of respirators to properly fitted and trained users. Operationally, the inhaled concentration can be estimated by dividing the ambient airborne concentration by the APF.

(15) Atmosphere-supplying respirator--A respirator that supplies the respirator user with breathing air from a source independent of the ambient atmosphere, and includes supplied-air respirators and self-contained breathing apparatus units.

(16) Background investigation--The investigation conducted by a licensee or applicant to support the determination of trustworthiness and reliability.

(17) Background radiation--Radiation from cosmic sources; non-technologically enhanced naturally-occurring radioactive material, including radon (except as a decay product of source or special nuclear material) and 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 radioactive materials regulated by the commission, Texas Department of State Health Services, NRC, or an Agreement State.

(18) Becquerel (Bq)--See §336.4 of this title (relating to Units of Radioactivity).

(19) 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 the rules in this chapter, "radiobioassay" is an equivalent term.

(20) Byproduct material--

(A) a [A] radioactive material, other than special nuclear material, that is produced in or made radioactive by exposure to radiation incident to the process of producing or using special nuclear material;

(B) the [The] tailings or wastes produced by or resulting from the extraction or concentration of uranium or thorium from ore processed primarily for its source material content, including discrete surface wastes resulting from uranium solution extraction processes, and other tailings having similar radiological characteristics. Underground ore bodies depleted by these solution extraction processes do not constitute "byproduct material" within this definition;

(C) any [Any] discrete source of radium-226 that is produced, extracted, or converted after extraction, for use for a commercial, medical, or research activity;

(D) any [Any] material that has been made radioactive by use of a particle accelerator, and is produced, extracted, or converted for use for a commercial, medical, or research activity; and

(E) any [Any] discrete source of naturally occurring radioactive material, other than source material, that is extracted or converted after extraction for use in a commercial, medical, or research activity and that the NRC, in consultation with the Administrator of the United States Environmental Protection Agency, the United States Secretary of Energy, the United States 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.

(21) CFR--Code of Federal Regulations.

(22) 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.

(23) Category 1 quantity of radioactive material--A quantity of radioactive material meeting or exceeding the category 1 threshold in accordance with §336.357(z) of this title (relating to Physical Protection of Category 1 and Category 2 Quantities of Radioactive Material). This is determined by calculating the ratio of the total activity of each radionuclide to the category 1 threshold for that radionuclide and adding the ratios together. If the sum is equal to or exceeds 1, the quantity would be considered a category 1 quantity. Category 1 quantities of radioactive material do not include the radioactive material contained in any fuel assembly, subassembly, fuel rod, or fuel pellet.

(24) Category 2 quantity of radioactive material--A quantity of radioactive material meeting or exceeding the category 2 threshold but less than the category 1 threshold in accordance with §336.357(z) of this title (relating to Physical Protection of Category 1 and Category 2 Quantities of Radioactive Material). This is determined by calculating the ratio of the total activity of each radionuclide to the category 2 threshold for that radionuclide and adding the ratios together. If the sum is equal to or exceeds 1, the quantity would be considered a category 2. Category 2 quantities of radioactive material do not include the radioactive material contained in any fuel assembly, subassembly, fuel rod, or fuel pellet.

(25) Class--A classification scheme for inhaled material according to its rate of clearance from the pulmonary region of the lung. Materials are classified as D, W, or Y, which applies to a range of clearance half-times: for Class D (Days) of less than ten days, for Class W (Weeks) from 10 to 100 days, and for Class Y (Years) of greater than 100 days. For purposes of the rules in this chapter, "lung class" and "inhalation class" are equivalent terms.

(26) Collective dose--The sum of the individual doses received in a given period of time by a specified population from exposure to a specified source of radiation.

(27) Committed dose equivalent ($H_{T,50}$) (CDE)--The dose equivalent to organs or tissues of reference (T) that will be received from an intake of radioactive material by an individual during the 50-year period following the intake.

(28) Committed effective dose equivalent ($H_{E,50}$) (CEDE)--The sum of the products of the weighting factors applicable to each of the body organs or tissues that are irradiated and the committed dose equivalent to each of these organs or tissues.

(29) Compact--The Texas Low-Level Radioactive Waste Disposal Compact established under Texas Health and Safety Code, §403.006 and Texas Low-Level Radioactive Waste Disposal Compact Consent Act, Public Law Number 105-236 (1998).

(30) Compact waste--Low-level radioactive waste that:

(A) is generated in a host state or a party state; or

(B) is not generated in a host state or a party state, but has been approved for importation to this state by the compact commission under §3.05 of the compact established under Texas Health and Safety Code, §403.006.

(31) Compact waste disposal facility--The low-level radioactive waste land disposal facility licensed by the commission under Subchapter H of this chapter (relating to Licensing Requirements for Near-Surface Land Disposal of Low-Level Radioactive Waste) for the disposal of compact waste.

(32) Constraint (dose constraint)--A value above which specified licensee actions are required.

(33) Critical group--The group of individuals reasonably expected to receive the greatest exposure to residual radioactivity for any applicable set of circumstances.

(34) Curie (Ci)--See §336.4 of this title (relating to Units of Radioactivity).

(35) Declared pregnant woman--A woman who has voluntarily informed the licensee, in writing, of her pregnancy and the estimated date of conception. The

declaration remains in effect until the declared pregnant woman withdraws the declaration in writing or is no longer pregnant.

(36) Decommission--To remove (as a facility) safely from service and reduce residual radioactivity to a level that permits:

(A) release of the property for unrestricted use and termination of license; or

(B) release of the property under restricted conditions and termination of the license.

(37) Deep-dose equivalent (H_d) (which applies to external whole-body exposure)--The dose equivalent at a tissue depth of one centimeter (1,000 milligrams/square centimeter).

(38) Demand respirator--An atmosphere-supplying respirator that admits breathing air to the facepiece only when a negative pressure is created inside the facepiece by inhalation.

(39) Depleted uranium--The source material uranium in which the isotope uranium-235 is less than 0.711%, by weight, of the total uranium present. Depleted uranium does not include special nuclear material.

(40) Derived air concentration (DAC)--The concentration of a given radionuclide in air which, if breathed by the "reference man" for a working year of 2,000 hours under conditions of light work (inhalation rate of 1.2 cubic meters of air/hour), results in an intake of one ALI. DAC values are given in Table I, Column 3, of §336.359(d) of this title (relating to Appendix B. Annual Limits on Intake (ALI) and Derived Air Concentrations (DAC) of Radionuclides for Occupational Exposure; Effluent Concentrations; Concentrations for Release to Sanitary Sewerage).

(41) Derived air concentration-hour (DAC-hour)--The product of the concentration of radioactive material in air (expressed as a fraction or multiple of the derived air concentration for each radionuclide) and the time of exposure to that radionuclide, in hours. A licensee shall take 2,000 DAC-hours to represent one, equivalent to a committed effective dose equivalent of 5 rems (0.05 sievert).

(42) Discrete source--A radionuclide that has been processed so that its concentration within a material has been purposely increased for use for commercial, medical, or research activities.

(43) Disposal--With regard to low-level radioactive waste, the isolation or removal of low-level radioactive waste from mankind and mankind's environment without intent to retrieve that low-level radioactive waste later.

(44) Disposable respirator--A respirator for which maintenance is not intended and that is designed to be discarded after excessive breathing resistance,

sorbent exhaustion, physical damage, or end-of-service-life renders it unsuitable for use. Examples of this type of respirator are a disposable half-mask respirator or a disposable escape-only SCBA.

(45) Distinguishable from background--The detectable concentration of a radionuclide is statistically different from the background concentration of that radionuclide in the vicinity of the site or, in the case of structures, in similar materials using adequate measurement technology, survey, and statistical techniques.

(46) Diversion--The unauthorized movement of radioactive material subject to §336.357 of this title (relating to Physical Protection of Category 1 and Category 2 Quantities of Radioactive Material) to a location different from the material's authorized destination inside or outside of the site at which the material is used or stored.

(47) Dose--A generic term that means absorbed dose, dose equivalent, effective dose equivalent, committed dose equivalent, committed effective dose equivalent, total organ dose equivalent, or total effective dose equivalent. For purposes of the rules in this chapter, "radiation dose" is an equivalent term.

(48) Dose equivalent (H_T)--The product of the absorbed dose in tissue, quality factor, and all other necessary modifying factors at the location of interest. The units of dose equivalent are the rem and sievert (S_v).

(49) Dose limits--The permissible upper bounds of radiation doses established in accordance with the rules in this chapter. For purposes of the rules in this chapter, "limits" is an equivalent term.

(50) Dosimetry processor--An individual or organization that processes and evaluates individual monitoring devices in order to determine the radiation dose delivered to the monitoring devices.

(51) Effective dose equivalent (H_E)--The sum of the products of the dose equivalent to each organ or tissue (H_T) and the weighting factor (w_T) applicable to each of the body organs or tissues that are irradiated.

(52) Embryo/fetus--The developing human organism from conception until the time of birth.

(53) Entrance or access point--Any opening through which an individual or extremity of an individual could gain access to radiation areas or to licensed radioactive materials. This includes portals of sufficient size to permit human access, irrespective of their intended use.

(54) Environmental Radiation and Perpetual Care Account--An account in the general revenue fund established for the purposes specified in the Texas Health and Safety Code, §401.306.

(55) Escorted access--Accompaniment while in a security zone by an approved individual who maintains continuous direct visual surveillance at all times over an individual who is not approved for unescorted access.

(56) Exposure--Being exposed to ionizing radiation or to radioactive material.

(57) Exposure rate--The exposure per unit of time.

(58) External dose--That portion of the dose equivalent received from any source of radiation outside the body.

(59) Extremity--Hand, elbow, arm below the elbow, foot, knee, and leg below the knee. The arm above the elbow and the leg above the knee are considered part of the whole body.

(60) Federal facility waste--Low-level radioactive waste that is the responsibility of the federal government under the Low-Level Radioactive Waste Policy Act, as amended by the Low-Level Radioactive Waste Policy Amendments Act of 1985 (42 United States Code, §2021b - 2021j). Excluded from this definition is low-level radioactive waste that is classified as greater than Class C in §336.362 of this title (relating to Appendix E. Classification and Characteristics of Low-Level Radioactive Waste).

(61) Federal facility waste disposal facility--A low-level radioactive waste land disposal facility for the disposal of federal facility waste licensed under Subchapters H and J of this chapter (relating to Licensing Requirement of Near-Surface Land Disposal of Low-Level Radioactive Waste, and Federal Facility Waste Disposal Facility).

(62) Filtering facepiece (dust mask)--A negative pressure particulate respirator with a filter as an integral part of the facepiece or with the entire facepiece composed of the filtering medium, not equipped with elastomeric sealing surfaces and adjustable straps.

(63) Fingerprint Orders--Orders issued by the Nuclear Regulatory Commission or the legally binding requirements issued by Agreement States that require fingerprints and criminal history records checks for individuals with unescorted access to category 1 and category 2 quantities of radioactive material or safeguards information-modified handling.

(64) Fit factor--A quantitative estimate of the fit of a particular respirator to a specific individual, and typically estimates the ratio of the concentration of a substance in ambient air to its concentration inside the respirator when worn.

(65) Fit test--The use of a protocol to qualitatively or quantitatively evaluate the fit of a respirator on an individual.

(66) General license--An authorization granted by an agency under its rules which is effective without the filing of an application with that agency or the issuance of a licensing document to the particular person.

(67) Generally applicable environmental radiation standards--Standards issued by the EPA under the authority of the Atomic Energy Act of 1954, as amended through October 4, 1996, that impose limits on radiation exposures or levels, or concentrations or quantities of radioactive material, in the general environment outside the boundaries of locations under the control of persons possessing or using radioactive material.

(68) Gray (Gy)--See §336.3 of this title (relating to Units of Radiation Exposure and Dose).

(69) Hazardous waste--Hazardous waste as defined in §335.1 of this title (relating to Definitions).

(70) Helmet--A rigid respiratory inlet covering that also provides head protection against impact and penetration.

(71) High radiation area--An area, accessible to individuals, in which radiation levels from radiation sources external to the body could result in an individual receiving a dose equivalent in excess of 0.1 rem (1 millisievert) in one hour

at 30 centimeters from the radiation source or 30 centimeters from any surface that the radiation penetrates.

(72) Hood--A respiratory inlet covering that completely covers the head and neck and may also cover portions of the shoulders and torso.

(73) Host state--A party state in which a compact facility is located or is being developed. The state of Texas is the host state under the Texas Low-Level Radioactive Waste Disposal Compact, §2.01, established under Texas Health and Safety Code, §403.006.

(74) Individual--Any human being.

(75) Individual monitoring--The assessment of:

(A) dose equivalent by the use of individual monitoring devices;

(B) committed effective dose equivalent by bioassay or by determination of the time-weighted air concentrations to which an individual has been exposed, that is, derived air concentration-hour; or

(C) dose equivalent by the use of survey data.

(76) Individual monitoring devices--Devices designed to be worn by a single individual for the assessment of dose equivalent such as film badges, thermoluminescence dosimeters, pocket ionization chambers, and personal ("lapel") air sampling devices.

(77) Inhalation class--See "Class."

(78) Inspection--An official examination and/or observation including, but not limited to, records, tests, surveys, and monitoring to determine compliance with the Texas Radiation Control Act and rules, orders, and license conditions of the commission.

(79) Internal dose--That portion of the dose equivalent received from radioactive material taken into the body.

(80) Land disposal facility--The land, buildings and structures, and equipment which are intended to be used for the disposal of low-level radioactive wastes into the subsurface of the land. For purposes of this chapter, a "geologic repository" as defined in 10 Code of Federal Regulations §60.2 as amended through October 27, 1988 (53 FR 43421) (relating to Definitions - high-level radioactive wastes in geologic repositories) is not considered a "land disposal facility."

(81) Lens dose equivalent (LDE)--The external exposure of the lens of the eye and is taken as the dose equivalent at a tissue depth of 0.3 centimeter (300 mg/cm²).

(82) License--See "Specific license."

(83) Licensed material--Radioactive material received, possessed, used, processed, transferred, or disposed of under a license issued by the commission.

(84) Licensee--Any person who holds a license issued by the commission in accordance with the Texas Health and Safety Code, Chapter 401 (Radioactive Materials and Other Sources of Radiation) and the rules in this chapter. For purposes of the rules in this chapter, "radioactive material licensee" is an equivalent term. Unless stated otherwise, "licensee" as used in the rules of this chapter means the holder of a "specific license."

(85) Licensing state--Any state with rules equivalent to the Suggested State Regulations for Control of Radiation relating to, and having an effective program for, the regulatory control of naturally occurring or accelerator-produced radioactive material (NARM) and which has been designated as such by the Conference of Radiation Control Program Directors, Inc.

(86) Local law enforcement agency (LLEA)--A public or private organization that has been approved by a federal, state, or local government to carry

firearms; make arrests; and is authorized and has the capability to provide an armed response in the jurisdiction where the licensed category 1 or category 2 quantity of radioactive material is used, stored, or transported.

(87) Loose-fitting facepiece--A respiratory inlet covering that is designed to form a partial seal with the face.

(88) Lost or missing licensed radioactive material--Licensed material whose location is unknown. This definition includes material that has been shipped but has not reached its planned destination and whose location cannot be readily traced in the transportation system.

(89) Low-level radioactive waste--

(A) Except as provided by subparagraph (B) of this paragraph, low-level radioactive waste means radioactive material that:

(i) is discarded or unwanted and is not exempt by a Texas Department of State Health Services rule adopted under the Texas Health and Safety Code, §401.106;

(ii) is waste, as that term is defined by 10 Code of Federal Regulations (CFR) §61.2; and

(iii) is subject to:

(I) concentration limits established under this

chapter; and

(II) disposal criteria established under this chapter.

(B) Low-level radioactive waste does not include:

(i) high-level radioactive waste defined by 10 CFR §60.2;

(ii) spent nuclear fuel as defined by 10 CFR §72.3;

(iii) transuranic waste as defined in this section;

(iv) byproduct material as defined by paragraph (20)(B) - (E)

of this section;

(v) naturally occurring radioactive material (NORM) waste;

or

(vi) oil and gas NORM waste.

(C) When used in this section, the references to 10 CFR sections mean those CFR sections as they existed on September 1, 1999, as required by Texas Health and Safety Code, §401.005.

(90) Lung class--See "Class."

(91) Member of the public--Any individual except when that individual is receiving an occupational dose.

(92) Minor--An individual less than 18 years of age.

(93) Mixed waste--A combination of hazardous waste, as defined in §335.1 of this title (relating to Definitions) and low-level radioactive waste. The term includes compact waste and federal facility waste containing hazardous waste.

(94) Mobile device--A piece of equipment containing licensed radioactive material that is either mounted on wheels or casters, or otherwise equipped for moving without a need for disassembly or dismounting; or designed to be hand carried. Mobile devices do not include stationary equipment installed in a fixed location.

(95) Monitoring--The measurement of radiation levels, 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 the rules in this chapter, "radiation monitoring" and "radiation protection monitoring" are equivalent terms.

(96) Movement control center--An operations center that is remote from transport activity and that maintains position information on the movement of radioactive material, receives reports of attempted attacks or thefts, provides a means for reporting these and other problems to appropriate agencies and can request and coordinate appropriate aid.

(97) Nationally tracked source--A sealed source containing a quantity equal to or greater than category 1 or category levels of any radioactive material listed in §336.351 of this title (relating to Reports of Transactions Involving Nationally Tracked Sources). 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 which 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.

(98) Naturally occurring or accelerator-produced radioactive material (NARM)--Any NARM except source material or special nuclear material.

(99) Naturally occurring radioactive material (NORM) waste--Solid, liquid, or gaseous material or combination of materials, excluding source material, special nuclear material, and byproduct material, that:

(A) in its natural physical state spontaneously emits radiation;

(B) is discarded or unwanted; and

(C) is not exempt under rules of the Texas Department of State Health Services adopted under Texas Health and Safety Code, §401.106.

(100) Near-surface disposal facility--A land disposal facility in which low-level radioactive waste is disposed of in or within the upper 30 meters of the earth's surface.

(101) Negative pressure respirator (tight fitting)--A respirator in which the air pressure inside the facepiece is negative during inhalation with respect to the ambient air pressure outside the respirator.

(102) No-later-than arrival time--The date and time that the shipping licensee and receiving licensee have established as the time an investigation will be initiated if the shipment has not arrived at the receiving facility. The no-later-than arrival time may not be more than six hours after the estimated arrival time for shipments of category 2 quantities of radioactive material.

(103) Nonstochastic effect--A health effect, the severity of which varies with the dose and for which a threshold is believed to exist. Radiation-induced cataract formation is an example of a nonstochastic effect. For purposes of the rules in this chapter, "deterministic effect" is an equivalent term.

(104) Occupational dose--The dose received by an individual in the course of employment in which the individual's assigned duties involve exposure to radiation and/or to radioactive material from licensed and unlicensed sources of radiation, whether in the possession of the licensee or other person. Occupational dose does not include dose received from background radiation, as a patient from medical practices, from voluntary participation in medical research programs, or as a member of the public.

(105) Oil and gas naturally occurring radioactive material (NORM) waste--NORM waste that constitutes, is contained in, or has contaminated oil and gas waste as that term is defined in the Texas Natural Resources Code, §91.1011.

(106) On-site--The same or geographically contiguous property that may be divided by public or private rights-of-way, provided the entrance and exit between the properties is at a cross-roads intersection, and access is by crossing, as opposed to going along, the right-of-way. Noncontiguous properties owned by the same person but connected by a right-of-way that the property owner controls and to which the public does not have access, is also considered on-site property.

(107) Particle accelerator--Any machine capable of accelerating electrons, protons, deuterons, or other charged particles in a vacuum and discharging the resultant particulate or other associated radiation at energies usually in excess of 1 million electron volts (MeV).

(108) Party state--Any state that has become a party to the compact in accordance with Article VII of the Texas Low-Level Radioactive Waste Disposal Compact, established under Texas Health and Safety Code, §403.006.

(109) Perpetual care account--The Environmental Radiation and Perpetual Care Account as defined in this section.

(110) Personnel monitoring equipment--See "Individual monitoring devices."

(111) Planned special exposure--An infrequent exposure to radiation, separate from and in addition to the annual occupational dose limits.

(112) Positive pressure respirator--A respirator in which the pressure inside the respiratory inlet covering exceeds the ambient air pressure outside the respirator.

(113) Powered air-purifying respirator (PAPR)--An air-purifying respirator that uses a blower to force the ambient air through air-purifying elements to the inlet covering.

(114) Pressure demand respirator--A positive pressure atmosphere-supplying respirator that admits breathing air to the facepiece when the positive pressure is reduced inside the facepiece by inhalation.

(115) Principal activities--Activities authorized by the license which are essential to achieving the purpose(s) for which the license is 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.

(116) Public dose--The dose received by a member of the public from exposure to radiation and/or radioactive material released by a licensee, or to any other source of radiation under the control of the licensee. It does not include occupational dose or doses received from background radiation, as a patient from medical practices, or from voluntary participation in medical research programs.

(117) Qualitative fit test (QLFT)--A pass/fail test to assess the adequacy of respirator fit that relies on the individual's response to the test agent.

(118) Quality factor (Q)--The modifying factor listed in Table I or II of §336.3(c) or (d) of this title (relating to Units of Radiation Exposure and Dose) that is used to derive dose equivalent from absorbed dose.

(119) Quantitative fit test (QNFT)--An assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator.

(120) Quarter (Calendar quarter)--A period of time equal to one-fourth of the year observed by the licensee (approximately 13 consecutive weeks), providing that the beginning of the first quarter in a year coincides with the starting date of the year and that no day is omitted or duplicated in consecutive quarters.

(121) Rad--See §336.3 of this title (relating to Units of Radiation Exposure and Dose).

(122) Radiation--Alpha particles, beta particles, gamma rays, x-rays, neutrons, high-speed electrons, high-speed protons, and other particles capable of producing ions. For purposes of the rules in this chapter, "ionizing radiation" is an equivalent term. Radiation, as used in this chapter, does not include non-ionizing radiation, such as radio- or microwaves or visible, infrared, or ultraviolet light.

(123) Radiation area--Any area, accessible to individuals, in which radiation levels could result in an individual receiving a dose equivalent in excess of

0.005 rem (0.05 millisievert) in one hour at 30 centimeters from the source of radiation or from any surface that the radiation penetrates.

(124) Radiation machine--Any device capable of producing ionizing radiation except those devices with radioactive material as the only source of radiation.

(125) Radioactive material--A naturally-occurring or artificially-produced solid, liquid, or gas that emits radiation spontaneously.

(126) Radioactive substance--Includes byproduct material, radioactive material, low-level radioactive waste, source material, special nuclear material, source of radiation, and naturally occurring radioactive material (NORM) NORM waste, excluding oil and gas NORM waste.

(127) Radioactivity--The disintegration of unstable atomic nuclei with the emission of radiation.

(128) Radiobioassay--See "Bioassay."

(129) Reference man--A hypothetical aggregation of human physical and physiological characteristics determined by international consensus. These characteristics shall be used by researchers and public health workers to standardize results of experiments and to relate biological insult to a common base. A description of "reference man" is contained in the International Commission on Radiological

Protection (ICRP) report, ICRP Publication 23, "Report of the Task Group on Reference Man."

(130) Rem--See §336.3 of this title (relating to Units of Radiation Exposure and Dose).

(131) Residual radioactivity--Radioactivity in structures, materials, soils, groundwater, and other media at a site resulting from activities under the licensee's control. This includes radioactivity from all licensed and unlicensed sources used by the licensee, but excludes background radiation. It also includes radioactive materials remaining at the site as a result of routine or accidental releases of radioactive material at the site and previous burials at the site, even if those burials were made in accordance with the provisions of 10 Code of Federal Regulations Part 20.

(132) Respiratory protection equipment--An apparatus, such as a respirator, used to reduce an individual's intake of airborne radioactive materials. For purposes of the rules in this chapter, "respiratory protective device" is an equivalent term.

(133) Restricted area--An area, access to which is limited by the licensee for the purpose of protecting individuals against undue risks from exposure to radiation and radioactive materials. Restricted area does not include areas used as residential quarters, but separate rooms in a residential building shall be set apart as a restricted area.

(134) Reviewing official--The individual who shall make the trustworthiness and reliability determination of an individual to determine whether the individual may have, or continue to have, unescorted access to the category 1 or category 2 quantities of radioactive materials that are possessed by the licensee.

(135) Roentgen (R)--See §336.3 of this title (relating to Units of Radiation Exposure and Dose).

(136) Sabotage--Deliberate damage, with malevolent intent, to a category 1 or category 2 quantity of radioactive material, a device that contains a category 1 or category 2 quantity of radioactive material, or the components of the security system.

(137) Safe haven--A readily recognizable and readily accessible site at which security is present or from which, in the event of an emergency, the transport crew can notify and wait for the local law enforcement authorities.

(138) Sanitary sewerage--A system of public sewers for carrying off waste water and refuse, but excluding sewage treatment facilities, septic tanks, and leach fields owned or operated by the licensee.

(139) Sealed source--Radioactive material that is permanently bonded or fixed in a capsule or matrix designed to prevent release and dispersal of the

radioactive material under the most severe conditions that are likely to be encountered in normal use and handling.

(140) Security zone--Any temporary or permanent area established by the licensee for the physical protection of category 1 or category 2 quantities of radioactive material.

(141) Self-contained breathing apparatus (SCBA)--An atmosphere-supplying respirator for which the breathing air source is designed to be carried by the user.

(142) Shallow-dose equivalent (H_s) (which applies to the external exposure of the skin of the whole body or the skin of an extremity)--The dose equivalent at a tissue depth of 0.007 centimeter (seven milligrams/square centimeter).

(143) SI--The abbreviation for the International System of Units.

(144) Sievert (S_v)--See §336.3 of this title (relating to Units of Radiation Exposure and Dose).

(145) Site boundary--That line beyond which the land or property is not owned, leased, or otherwise controlled by the licensee.

(146) Source material--

(A) uranium [Uranium] or thorium, or any combination thereof, in any physical or chemical form; or

(B) ores [Ores] that contain, by weight, 0.05% or more of uranium, thorium, or any combination thereof. Source material does not include special nuclear material.

(147) Special form radioactive material--Radioactive material which is either a single solid piece or is contained in a sealed capsule that can be opened only by destroying the capsule and which has at least one dimension not less than five millimeters and which satisfies the test requirements of 10 Code of Federal Regulations §71.75 as amended through September 28, 1995 (60 FR 50264) (Transportation of License Material).

(148) Special nuclear material--

(A) plutonium [Plutonium], uranium-233, uranium enriched in the isotope 233 or in the isotope 235, and any other material that the National Regulatory Commission, under the provisions of the Atomic Energy Act of 1954, §51, as amended through November 2, 1994 (Public Law 103-437), determines to be special nuclear material, but does not include source material; or

(B) any material artificially enriched by any of the foregoing, but does not include source material.

(149) Special nuclear material in quantities not sufficient to form a critical mass--Uranium enriched in the isotope 235 in quantities not exceeding 350 grams of contained uranium-235; uranium-233 in quantities not exceeding 200 grams; plutonium in quantities not exceeding 200 grams; or any combination of these in accordance with the following formula: For each kind of special nuclear material, determine the ratio between the quantity of that special nuclear material and the quantity specified in this paragraph for the same kind of special nuclear material. The sum of such ratios for all of the kinds of special nuclear material in combination shall not exceed 1. For example, the following quantities in combination would not exceed the limitation: (175 grams contained U-235/350 grams) + (50 grams U-233/200 grams) + (50 grams Pu/200 grams) = 1.

(150) Specific license--A licensing document issued by an agency upon an application filed under its rules. For purposes of the rules in this chapter, "radioactive material license" is an equivalent term. Unless stated otherwise, "license" as used in this chapter means a "specific license."

(151) State--The state of Texas.

(152) Stochastic effect--A health effect that occurs randomly and for which the probability of the effect occurring, rather than its severity, is assumed to be

a linear function of dose without threshold. Hereditary effects and cancer incidence are examples of stochastic effects. For purposes of the rules in this chapter, "probabilistic effect" is an equivalent term.

(153) Supplied-air respirator (SAR) or airline respirator--An atmosphere-supplying respirator for which the source of breathing air is not designed to be carried by the user.

(154) Survey--An evaluation of the radiological conditions and potential hazards incident to the production, use, transfer, release, disposal, and/or presence of radioactive materials or other sources of radiation. When appropriate, this evaluation includes, but is not limited to, physical examination of the location of radioactive material and measurements or calculations of levels of radiation or concentrations or quantities of radioactive material present.

(155) Telemetric position monitoring system--A data transfer system that captures information from instrumentation and/or measuring devices about the location and status of a transport vehicle or package between the departure and destination locations.

(156) Termination--As applied to a license, a release by the commission of the obligations and authorizations of the licensee under the terms of the license. It does not relieve a person of duties and responsibilities imposed by law.

(157) Tight-fitting facepiece--A respiratory inlet covering that forms a complete seal with the face.

(158) Total effective dose equivalent (TEDE)--The sum of the effective dose equivalent (for external exposures) and the committed effective dose equivalent (for internal exposures).

(159) Total organ dose equivalent (TODE)--The sum of the deep-dose equivalent and the committed dose equivalent to the organ receiving the highest dose as described in §336.346(a)(6) of this title (relating to Records of Individual Monitoring Results).

(160) Transuranic waste--For the purposes of this chapter, wastes containing alpha emitting transuranic radionuclides with a half-life greater than five years at concentrations greater than 100 nanocuries/gram.

(161) Trustworthiness and reliability--Characteristics of an individual considered dependable in judgment, character, and performance, such that unescorted access to category 1 or category 2 quantities of radioactive material by that individual does not constitute an unreasonable risk to the public health and safety or security. A determination of trustworthiness and reliability for this purpose is based upon the results from a background investigation.

(162) Type A quantity (for packaging)--A quantity of radioactive material, the aggregate radioactivity of which does not exceed A 1 for special form radioactive material or A2 for normal form radioactive material, where A1 and A2 are given in or shall be determined by procedures in Appendix A to 10 Code of Federal Regulations Part 71 as amended through September 28, 1995 (60 FR 50264) (Packaging and Transportation of Radioactive Material).

(163) Type B quantity (for packaging)--A quantity of radioactive material greater than a Type A quantity.

(164) Unescorted access--Solitary access to an aggregated category 1 or category 2 quantity of radioactive material or the devices that contain the material.

(165) Unrefined and unprocessed ore--Ore in its natural form before any processing, such as grinding, roasting, beneficiating, or refining.

(166) Unrestricted area--Any area that is not a restricted area.

(167) User seal check (fit check)--An action conducted by the respirator user to determine if the respirator is properly seated to the face. Examples include negative pressure check, positive pressure check, irritant smoke check, or isoamyl acetate check.

(168) Very high radiation area--An area, accessible to individuals, in which radiation levels from radiation sources external to the body could result in an individual receiving an absorbed dose in excess of 500 rads (five grays) in one hour at one meter from a source of radiation or one meter from any surface that the radiation penetrates.

(169) Violation--An infringement of any provision of the Texas Radiation Control Act (TRCA) or of any rule, order, or license condition of the commission issued under the TRCA or this chapter.

(170) Waste--Low-level radioactive wastes containing source, special nuclear, or byproduct material that are acceptable for disposal in a land disposal facility. For the purposes of this definition, low-level radioactive waste means radioactive waste not classified as high-level radioactive waste, transuranic waste, spent nuclear fuel, or byproduct material as defined in paragraph (20)(B) - (E) of this section.

(171) Week--Seven consecutive days starting on Sunday.

(172) Weighting factor (w_T) for an organ or tissue (T)--The proportion of the risk of stochastic effects resulting from irradiation of that organ or tissue to the total risk of stochastic effects when the whole body is irradiated uniformly. For calculating the effective dose equivalent, the values of w_T are:

Figure: 30 TAC §336.2(172)

Organ Dose Weighting Factors

<u>Organ or Tissue</u>	<u>w_T</u>
Gonads	0.25
Breast	0.15
Red bone marrow	0.12
Lung	0.12
Thyroid	0.03
Bone surfaces	0.03
Remainder	0.30 ¹
Whole body	1.00 ²

1. The value 0.30 results from 0.06 for each of five remainder organs, excluding the skin and the lens of the eye, that receive the highest doses.
2. For the purpose of weighting the external whole body dose (for adding it to the internal dose) a single weighting factor (w_T), $w_T = 1.0$, has been specified. The use of other weighting factors for external exposure will be approved on a case-by-case basis until such time as specific guidance is issued.

(173) Whole body--For purposes of external exposure, head, trunk including male gonads, arms above the elbow, or legs above the knee.

(174) Worker--An individual engaged in activities under a license issued by the commission and controlled by a licensee, but does not include the licensee.

(175) Working level (WL)--Any combination of short-lived radon daughters in one liter of air that will result in the ultimate emission of 1.3×10^5 MeV of potential alpha particle energy. The short-lived radon daughters are: for radon-222: polonium-218, lead-214, bismuth-214, and polonium-214; and for radon-220: polonium-216, lead-212, bismuth-212, and polonium-212.

(176) Working level month (WLM)--An exposure to one working level for 170 hours (2,000 working hours per year divided by 12 months per year is approximately equal to 170 hours per month).

(177) Year--The period of time beginning in January used to determine compliance with the provisions of the rules in this chapter. The licensee shall change the starting date of the year used to determine compliance by the licensee provided that the change is made at the beginning of the year and that no day is omitted or duplicated in consecutive years.

SUBCHAPTER D: STANDARDS FOR PROTECTION AGAINST RADIATION

§336.315, §336.357

§336.315. General Requirements for Surveys and Monitoring.

(a) Each licensee shall make, or cause to be made, surveys that:

(1) are necessary for the licensee to comply with the rules in this chapter or conditions of the license; and

(2) are reasonable under the circumstances to evaluate:

(A) the magnitude and extent of radiation levels;

(B) concentrations or quantities of radioactive material; and

(C) the potential radiological hazards of the radiation levels and residual radioactivity detected.

(b) The licensee shall ensure that instruments and equipment used for quantitative radiation measurements (e.g., dose rate and effluent monitoring) are calibrated:

(1) by a person licensed by the Texas Department of Health, another Agreement State, a Licensing State, or the United States Nuclear Regulatory Commission to perform this service;

(2) at intervals not to exceed 12 months, unless a more restrictive time interval is specified in another part of this chapter or in the license; and

(3) for the types of radiation measured and at appropriate energies.

(c) All personnel dosimeters, except for direct and indirect reading pocket ionization chambers and those dosimeters used to measure the dose to any extremity, that require processing to determine the radiation dose and that are used by licensees to comply with §336.305 of this title (relating to Occupational Dose Limits for Adults), with other applicable provisions of this chapter, or with conditions specified in a license shall be processed and evaluated by a dosimetry processor:

(1) holding current personnel dosimetry accreditation from the National Voluntary Laboratory Accreditation Program (NVLAP) of the National Institute of Standards and Technology; and

(2) approved in this accreditation process for the type of radiation or radiations included in the NVLAP program that most closely approximates the type of radiation or radiations for which the individual wearing the dosimeter is monitored.

(d) Each licensee shall ensure that individuals who are required to use an individual monitoring device follow appropriate procedures in regard to selection of the type of device, location where it is worn, period of use, and precautions to prevent exposures that are not occupational dose to that individual.

(e) Regardless of §336.343(a) of this title (relating to Records of Surveys), records from surveys describing the location and amount of subsurface residual radioactivity identified at the site must be kept with records important for decommissioning, and such records must be retained in accordance with §336.621 of this title (relating to Recordkeeping for Decommissioning), as applicable.

§336.357. Physical Protection of Category 1 and Category 2 Quantities of Radioactive Material.

(a) Specific exemption. A licensee that possesses radioactive waste that contains category 1 or category 2 quantities of radioactive material is exempt from the requirements of subsections (b) - (w) of this section. However, any radioactive waste that contains discrete sources, ion-exchange resins, or activated material that weighs less than 2,000 kilograms (4,409 pounds) is not exempt from the requirements of subsections (b) - (w) of this section. The licensee shall implement the following requirements to secure the radioactive waste:

(1) use [Use] continuous physical barriers that allow access to the radioactive waste only through established access control points;

(2) use [Use] a locked door or gate with monitored alarm at the access control point;

(3) assess [Assess] and respond to each actual or attempted unauthorized access to determine whether an actual or attempted theft, sabotage, or diversion occurred; and

(4) immediately [Immediately] notify the local law enforcement agency (LLEA) and request an armed response from the LLEA upon determination that there was an actual or attempted theft, sabotage, or diversion of the radioactive waste that contains category 1 or category 2 quantities of radioactive material.

(b) Personnel access authorization requirements for category 1 or category 2 quantities of radioactive material.

(1) General.

(A) Each licensee that possesses an aggregated quantity of radioactive material at or above the category 2 threshold shall establish, implement, and maintain its access authorization program in accordance with the requirements of this subsection and subsections (c) - (h) of this section.

(B) An applicant for a new license and each licensee, upon application for modification of its license, that would become newly subject to the requirements of this subsection and subsections (c) - (h) of this section, shall implement the requirements of this subsection and subsections (c) - (h) of this section, as appropriate, before taking possession of an aggregated category 1 or category 2 quantity of radioactive material.

(C) Any licensee that has not previously implemented the Security Orders or been subject to the provisions of this subsection and subsections (c) - (h) of this section shall implement the provisions of this subsection and subsections (c) - (h) of this section before aggregating radioactive material to a quantity that equals or exceeds the category 2 threshold.

(2) General performance objective. The licensee's access authorization program must ensure that the individuals specified in paragraph (3)(A) of this subsection are trustworthy and reliable.

(3) Applicability.

(A) Licensees shall subject the following individuals to an access authorization program:

(i) any [Any] individual whose assigned duties require unescorted access to category 1 or category 2 quantities of radioactive material or to any device that contains the radioactive material; and

(ii) reviewing [Reviewing] officials.

(B) Licensees need not subject the categories of individuals listed in subsection (f)(1) of this section to the investigation elements of the access authorization program.

(C) Licensees shall approve for unescorted access to category 1 or category 2 quantities of radioactive material only those individuals with job duties that require unescorted access to category 1 or category 2 quantities of radioactive material.

(D) Licensees may include individuals needing access to safeguards information-modified handling under 10 Code of Federal Regulations (CFR) Part 73, in the access authorization program under this subsection and subsections (c) - (h) of this section.

(c) Access authorization program requirements.

(1) Granting unescorted access authorization.

(A) Licensees shall implement the requirements of subsection (b) of this section, this subsection, and subsections (d) - (h) of this section for granting initial or reinstated unescorted access authorization.

(B) Individuals determined to be trustworthy and reliable shall also complete the security training required by subsection (j)(3) of this section before being allowed unescorted access to category 1 or category 2 quantities of radioactive material.

(2) Reviewing officials.

(A) Reviewing officials are the only individuals who may make trustworthiness and reliability determinations that allow individuals to have unescorted access to category 1 or category 2 quantities of radioactive materials possessed by the licensee.

(B) Each licensee shall name one or more individuals to be reviewing officials. After completing the background investigation on the reviewing official, the licensee shall provide under oath or affirmation, a certification that the reviewing official is deemed trustworthy and reliable by the licensee. The fingerprints of the named reviewing official must be taken by a law enforcement agency, Federal or State agencies that provide fingerprinting services to the public, or commercial fingerprinting services authorized by a State to take fingerprints. The licensee shall

recertify that the reviewing official is deemed trustworthy and reliable every 10 years in accordance with subsection (d)(3) [(d)(2)] of this section.

(C) Reviewing officials must be permitted to have unescorted access to category 1 or category 2 quantities of radioactive materials or access to safeguards information or safeguards information-modified handling, if the licensee possesses safeguards information or safeguards information-modified handling.

(D) Reviewing officials cannot approve other individuals to act as reviewing officials.

(E) A reviewing official does not need to undergo a new background investigation before being named by the licensee as the reviewing official if:

(i) the [The] individual has undergone a background investigation that included fingerprinting and a Federal Bureau of Investigations (FBI) criminal history records check and has been determined to be trustworthy and reliable by the licensee; or

(ii) the [The] individual is subject to a category listed in subsection (f)(1) of this section.

(3) Informed consent.

(A) Licensees may not initiate a background investigation without the informed and signed consent of the subject individual. This consent must include authorization to share personal information with other individuals or organizations as necessary to complete the background investigation. Before a final adverse determination, the licensee shall provide the individual with an opportunity to correct any inaccurate or incomplete information that is found during the background investigation. Licensees do not need to obtain signed consent from those individuals that meet the requirements of subsection (d)(2) of this section. A signed consent must be obtained prior to any reinvestigation.

(B) The subject individual may withdraw his or her consent at any time. Licensees shall inform the individual that:

(i) if [If] an individual withdraws his or her consent, the licensee may not initiate any elements of the background investigation that were not in progress at the time the individual withdrew his or her consent; and

(ii) the [The] withdrawal of consent for the background investigation is sufficient cause for denial or termination of unescorted access authorization.

(4) Personal history disclosure. Any individual who is applying for unescorted access authorization shall disclose the personal history information that is

required by the licensee's access authorization program for the reviewing official to make a determination of the individual's trustworthiness and reliability. Refusal to provide, or the falsification of, any personal history information required by subsection (b) of this section, this subsection, and subsections (d) - (h) of this section is sufficient cause for denial or termination of unescorted access.

(5) Determination basis.

(A) The reviewing official shall determine whether to permit, deny, unfavorably terminate, maintain, or administratively withdraw an individual's unescorted access authorization based on an evaluation of all of the information collected to meet the requirements of subsection (b) of this section, this subsection, and subsections (d) - (h) of this section.

(B) The reviewing official may not permit any individual to have unescorted access until the reviewing official has evaluated all of the information collected to meet the requirements of subsection (b) of this section, this subsection, and subsections (d) - (h) of this section and determined that the individual is trustworthy and reliable. The reviewing official may deny unescorted access to any individual based on information obtained at any time during the background investigation.

(C) The licensee shall document the basis for concluding whether or not there is reasonable assurance that an individual is trustworthy and reliable.

(D) The reviewing official may terminate or administratively withdraw an individual's unescorted access authorization based on information obtained after the background investigation has been completed and the individual granted unescorted access authorization.

(E) Licensees shall maintain a list of persons currently approved for unescorted access authorization. When a licensee determines that a person no longer requires unescorted access or meets the access authorization requirements, the licensee shall remove the person from the approved list as soon as possible, but no-later-than seven working days, and take prompt measures to ensure that the individual is unable to have unescorted access to the material.

(6) Procedures. Licensees shall develop, implement, and maintain written procedures for implementing the access authorization program. The procedures must include provisions for the notification of individuals who are denied unescorted access. The procedures must include provisions for the review, at the request of the affected individual, of a denial or termination of unescorted access authorization. The procedures must contain a provision to ensure that the individual is informed of the grounds for the denial or termination of unescorted access authorization and allow the individual an opportunity to provide additional relevant information.

(7) Right to correct and complete information.

(A) Prior to any final adverse determination, licensees shall provide each individual subject to subsection (b) of this section, this subsection, and subsections (d) - (h) of this section with the right to complete, correct, and explain information obtained as a result of the licensee's background investigation. Confirmation of receipt by the individual of this notification must be maintained by the licensee for a period of one year from the date of the notification.

(B) If, after reviewing his or her criminal history record, an individual believes that it is incorrect or incomplete in any respect and wishes to change, correct, update, or explain anything in the record, the individual may initiate challenge procedures. These procedures include direct application by the individual challenging the record to the law enforcement agency that contributed the questioned information or a direct challenge as to the accuracy or completeness of any entry on the criminal history record to the Federal Bureau of Investigation, Criminal Justice Information Services (CJIS) Division, ATTN: SCU, Mod. D-2, 1000 Custer Hollow Road, Clarksburg, WV 26306, as set forth in 28 CFR §§16.30 - 16.34. In the latter case, the FBI will forward the challenge to the agency that submitted the data, and will request that the agency verify or correct the challenged entry. Upon receipt of an official communication directly from the agency that contributed the original information, the FBI Identification Division will make any changes necessary in accordance with the information supplied by that agency. Licensees must provide at least 10 days for an individual to initiate action to challenge the results of an FBI criminal history records check after the record is made available for his or her review. The licensee may make a

final adverse determination based upon the criminal history records only after receipt of the FBI's confirmation or correction of the record.

(8) Records.

(A) The licensee shall retain documentation regarding the trustworthiness and reliability of individual employees for three years from the date the individual no longer requires unescorted access to category 1 or category 2 quantities of radioactive material.

(B) The licensee shall retain a copy of the current access authorization program procedures as a record for three years after the procedure is no longer needed. If any portion of the procedure is superseded, the licensee shall retain the superseded material for three years after the record is superseded.

(C) The licensee shall retain the list of persons approved for unescorted access authorization for three years after the list is superseded or replaced.

(d) Background investigations.

(1) Initial investigation. Before allowing an individual unescorted access to category 1 or category 2 quantities of radioactive material or to the devices that contain the material, licensees shall complete a background investigation of the

individual seeking unescorted access authorization. The scope of the investigation must encompass at least the seven years preceding the date of the background investigation or since the individual's eighteenth birthday, whichever is shorter. The background investigation must include at a minimum:

(A) Fingerprinting and an FBI identification and criminal history records check in accordance with subsection (e) of this section;

(B) Verification of true identity. Licensees shall verify the true identity of the individual applying for unescorted access authorization to ensure that the applicant is who he or she claims to be. A licensee shall review official identification documents (e.g., driver's license; passport; government identification; certificate of birth issued by the state, province, or country of birth) and compare the documents to personal information data provided by the individual to identify any discrepancy in the information. Licensees shall document the type, expiration, and identification number of the identification document, or maintain a photocopy of identifying documents on file in accordance with subsection (g) of this section. Licensees shall certify in writing that the identification was properly reviewed and shall maintain the certification and all related documents for review upon inspection;

(C) Employment history verification. Licensees shall complete an employment history verification, including military history. Licensees shall verify the individual's employment with each previous employer for the most recent seven years before the date of application;

(D) Verification of education. Licensees shall verify the individual's education during the claimed period;

(E) Character and reputation determination. Licensees shall complete reference checks to determine the character and reputation of the individual who has applied for unescorted access authorization. Unless other references are not available, reference checks may not be conducted with any person who is known to be a close member of the individual's family, including but not limited to the individual's spouse, parents, siblings, or children, or any individual who resides in the individual's permanent household. Reference checks under subsections (b) and (c) of this section, this subsection, and subsections (e) - (h) of this section must be limited to whether the individual has been and continues to be trustworthy and reliable;

(F) The licensee shall also, to the extent possible, obtain independent information to corroborate the information provided by the individual (e.g., seek references not supplied by the individual); and

(G) If a previous employer, educational institution, or any other entity with which the individual claims to have been engaged fails to provide information or indicates an inability or unwillingness to provide information within a time frame deemed appropriate by the licensee, but at least after 10 business days of the request or if the licensee is unable to reach the entity, the licensee shall document

the refusal, unwillingness, or inability in the record of investigation and attempt to obtain the information from an alternate source.

(2) Grandfathering.

(A) Individuals who have been determined to be trustworthy and reliable for unescorted access to category 1 or category 2 quantities of radioactive material under the Fingerprint Orders may continue to have unescorted access to category 1 and category 2 quantities of radioactive material without further investigation. These individuals shall be subject to the reinvestigation requirement.

(B) Individuals who have been determined to be trustworthy and reliable under the provisions of 10 CFR Part 73 or the Security Orders for access to safeguards information, safeguards information-modified handling, or risk-significant material may have unescorted access to category 1 and category 2 quantities of radioactive material without further investigation. The licensee shall document that the individual was determined to be trustworthy and reliable under the provisions of 10 CFR Part 73 or a Security Order. Security Order, in this context, refers to any order that was issued by the United States Nuclear Regulatory Commission (NRC) that required fingerprints and an FBI criminal history records check for access to safeguards information, safeguards information-modified handling, or risk significant material such as special nuclear material or large quantities of uranium hexafluoride. These individuals shall be subject to the reinvestigation requirement.

(3) Reinvestigations. Licensees shall conduct a reinvestigation every 10 years for any individual with unescorted access to category 1 or category 2 quantities of radioactive material. The reinvestigation shall consist of fingerprinting and an FBI identification and criminal history records check in accordance with subsection (e) of this section. The reinvestigations must be completed within 10 years of the date on which these elements were last completed.

(e) Requirements for criminal history records checks of individuals granted unescorted access to category 1 or category 2 quantities of radioactive material.

(1) General performance objective and requirements.

(A) Except for those individuals listed in subsection (f) of this section and those individuals grandfathered under subsection (d)(2) of this section, each licensee subject to the provisions of subsections (b) - (d) of this section, this subsection, and subsections (f) - (h) of this section shall fingerprint each individual who is to be permitted unescorted access to category 1 or category 2 quantities of radioactive material. Licensees shall transmit all collected fingerprints to the NRC for transmission to the FBI. The licensee shall use the information received from the FBI as part of the required background investigation to determine whether to grant or deny further unescorted access to category 1 or category 2 quantities of radioactive materials for that individual.

(B) The licensee shall notify each affected individual that his or her fingerprints will be used to secure a review of his or her criminal history record and shall inform him or her of the procedures for revising the record or adding explanations to the record.

(C) Fingerprinting is not required if a licensee is reinstating an individual's unescorted access authorization to category 1 or category 2 quantities of radioactive materials if:

(i) the [The] individual returns to the same facility that granted unescorted access authorization within 365 days of the termination of his or her unescorted access authorization; and

(ii) the [The] previous access was terminated under favorable conditions.

(D) Fingerprints do not need to be taken if an individual who is an employee of a licensee, contractor, manufacturer, or supplier has been granted unescorted access to category 1 or category 2 quantities of radioactive material, access to safeguards information, or safeguards information-modified handling by another licensee, based upon a background investigation conducted under this section, the Fingerprint Orders, or 10 CFR Part 73. An existing criminal history records check file may be transferred to the licensee asked to grant unescorted access in accordance with the provisions of subsection (g)(3) of this section.

(E) Licensees shall use the information obtained as part of a criminal history records check solely for the purpose of determining an individual's suitability for unescorted access authorization to category 1 or category 2 quantities of radioactive materials, access to safeguards information, or safeguards information-modified handling.

(2) Prohibitions.

(A) Licensees may not base a final determination to deny an individual unescorted access authorization to category 1 or category 2 quantities of radioactive material solely on the basis of information received from the FBI involving:

(i) an [An] arrest more than one year old for which there is no information of the disposition of the case; or

(ii) an [An] arrest that resulted in dismissal of the charge or an acquittal.

(B) Licensees may not use information received from a criminal history records check obtained under subsections (b) - (d) of this section, this subsection, and subsections (f) - (h) of this section in a manner that would infringe upon the rights of any individual under the First Amendment to the Constitution of the United States nor shall licensees use the information in any way that would

discriminate among individuals on the basis of race, religion, national origin, gender, or age.

(3) Procedures for processing of fingerprint checks.

(A) For the purpose of complying with subsections (b) - (d) of this section, this subsection, and subsections (f) - (h) of this section, licensees shall use an appropriate method listed in 10 CFR §37.7 to submit to the United States Nuclear Regulatory Commission, Director, Division of Facilities and Security, 11545 Rockville Pike, ATTN: Criminal History Program/Mail Stop T-03B46M [TWB-05 B32M], Rockville, Maryland 20852-2738, one completed, legible standard fingerprint card (Form FD-258, ORIMDNRCOOOZ), electronic fingerprint scan or, where practicable, other fingerprint record for each individual requiring unescorted access to category 1 or category 2 quantities of radioactive material. Copies of these forms may be obtained by writing the Office of the Chief Information Officer [Information Services], U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; by calling (630) 829-9565; or by e-mail to FORMS.Resource@nrc.gov. Guidance on submitting electronic fingerprints can be found at <http://www.nrc.gov/site-help/e-submittals.html>.

(B) Fees for the processing of fingerprint checks are due upon application. Licensees shall submit payment with the application for the processing of fingerprints through corporate check, certified check, cashier's check, money order, or electronic payment, made payable to "U.S. NRC." (For guidance on making electronic payments, contact the Security Branch, Division of Facilities and Security at (301) 415-

7513 [492-3531].) Combined payment for multiple applications is acceptable. The NRC publishes the amount of the fingerprint check application fee on the NRC's public website. (To find the current fee amount, go to the Electronic Submittals page at <http://www.nrc.gov/site-help/e-submittals.html> and see the link for the Criminal History under Electronic Submission Systems.)

(C) The NRC will forward to the submitting licensee all data received from the FBI as a result of the licensee's application(s) for criminal history records checks.

(f) Relief from fingerprinting, identification, and criminal history records checks and other elements of background investigations for designated categories of individuals permitted unescorted access to certain radioactive materials.

(1) Fingerprinting, and the identification and criminal history records checks required by §149 of the Atomic Energy Act of 1954, as amended, and other elements of the background investigation, are not required for the following individuals prior to granting unescorted access to category 1 or category 2 quantities of radioactive materials:

(A) an [An] employee of the NRC or of the Executive Branch of the United States (U.S.) Government who has undergone fingerprinting for a prior U.S. Government criminal history records check;

(B) a [A] Member of Congress;

(C) an [An] employee of a member of Congress or Congressional committee who has undergone fingerprinting for a prior U.S. Government criminal history records check;

(D) the [The] Governor of a State or his or her designated State employee representative;

(E) Federal, State, or local law enforcement personnel;

(F) State Radiation Control Program Directors and State Homeland Security Advisors or their designated State employee representatives;

(G) Agreement State employees conducting security inspections on behalf of the NRC under an agreement executed under §274.i. of the Atomic Energy Act;

(H) representatives [Representatives] of the International Atomic Energy Agency (IAEA) engaged in activities associated with the U.S./IAEA Safeguards Agreement who have been certified by the NRC;

(I) emergency [Emergency] response personnel who are responding to an emergency;

(J) commercial [Commercial] vehicle drivers for road shipments of category 1 and category 2 quantities of radioactive material;

(K) package [Package] handlers at transportation facilities such as freight terminals and railroad yards;

(L) any [Any] individual who has an active federal security clearance, provided that he or she makes available the appropriate documentation. Written confirmation from the agency/employer that granted the federal security clearance or reviewed the criminal history records check must be provided to the licensee. The licensee shall retain this documentation for a period of three years from the date the individual no longer requires unescorted access to category 1 or category 2 quantities of radioactive material; and

(M) any [Any] individual employed by a service provider licensee for which the service provider licensee has conducted the background investigation for the individual and approved the individual for unescorted access to category 1 or category 2 quantities of radioactive material. Written verification from the service provider must be provided to the licensee. The licensee shall retain the documentation for a period of three years from the date the individual no longer requires unescorted access to category 1 or category 2 quantities of radioactive material. es unescorted access to category 1 or category 2 quantities of radioactive material; and

(2) Fingerprinting, and the identification and criminal history records checks required by §149 of the Atomic Energy Act of 1954, as amended, are not required for an individual who has had a favorably adjudicated U.S. Government criminal history records check within the last five years, under a comparable U.S. Government program involving fingerprinting and an FBI identification and criminal history records check provided that he or she makes available the appropriate documentation. Written confirmation from the agency/employer that reviewed the criminal history records check must be provided to the licensee. The licensee shall retain this documentation for a period of three years from the date the individual no longer requires unescorted access to category 1 or category 2 quantities of radioactive material. These programs include, but are not limited to:

(A) National Agency Check;

(B) Transportation Worker Identification Credentials under 49 CFR Part 1572;

(C) Bureau of Alcohol, Tobacco, Firearms, and Explosives background check and clearances under 27 CFR Part 555;

(D) Health and Human Services security risk assessments for possession and use of select agents and toxins under 42 CFR Part 73;

(E) Hazardous Material security threat assessment for hazardous material endorsement to commercial drivers license under 49 CFR Part 1572; and

(F) Customs and Border Protection's Free and Secure Trade Program.

(g) Protection of information.

(1) Each licensee who obtains background information on an individual under subsections (b) - (f) of this section, this subsection, and subsection (h) of this section shall establish and maintain a system of files and written procedures for protection of the records and the personal information from unauthorized disclosure.

(2) The licensee may not disclose the record or personal information collected and maintained to persons other than the subject individual, his or her representative, or to those who have a need to have access to the information in performing assigned duties in the process of granting or denying unescorted access to category 1 or category 2 quantities of radioactive material, safeguards information, or safeguards information-modified handling. No individual authorized to have access to the information may disseminate the information to any other individual who does not have a need to know.

(3) The personal information obtained on an individual from a background investigation may be provided to another licensee:

(A) upon [Upon] the individual's written request to the licensee holding the data to disseminate the information contained in his or her file; and

(B) the [The] recipient licensee verifies information such as name, date of birth, social security number, gender, and other applicable physical characteristics.

(4) The licensee shall make background investigation records obtained under subsections (b) - (f) of this section, this subsection, and subsection (h) of this section available for examination by an authorized representative of the commission [NRC] to determine compliance with the regulations and laws.

(5) The licensee shall retain all fingerprint and criminal history records (including data indicating no record) received from the FBI or a copy of these records if the individual's file has been transferred on an individual for three years from the date the individual no longer requires unescorted access to category 1 or category 2 quantities of radioactive material.

(h) Access authorization program review.

(1) Each licensee shall be responsible for the continuing effectiveness of the access authorization program. Each licensee shall ensure that access authorization programs are reviewed to confirm compliance with the requirements of subsections (b)

- (g) of this section and this subsection and that comprehensive actions are taken to correct any noncompliance identified. The review program shall evaluate all program performance objectives and requirements. Each licensee shall periodically (at least annually) review the access authorization program content and implementation.

(2) The results of the reviews, along with any recommendations, must be documented. Each review report must identify conditions that are adverse to the proper performance of the access authorization program, the cause of the condition(s), and, when appropriate, recommend corrective actions, and corrective actions taken. The licensee shall review the findings and take any additional corrective actions necessary to preclude repetition of the condition, including reassessment of the deficient areas where indicated.

(3) Review records must be maintained for three years.

(i) Security program.

(1) Applicability.

(A) Each licensee that possesses an aggregated category 1 or category 2 quantity of radioactive material shall establish, implement, and maintain a security program in accordance with the requirements of this subsection and subsections (j) - (q) of this section.

(B) An applicant for a new license, and each licensee that would become newly subject to the requirements of this subsection and subsections (j) - (q) of this section upon application for modification of its license, shall implement the requirements of this subsection and subsections (j) - (q) of this section, as appropriate, before taking possession of an aggregated category 1 or category 2 quantity of radioactive material.

(C) Any licensee that has not previously implemented the Security Orders or been subject to the provisions of this subsection and subsections (j) - (q) of this section shall provide written notification to the commission [NRC regional office specified in 10 CFR §30.6] at least 90 days before aggregating radioactive material to a quantity that equals or exceeds the category 2 threshold.

(2) General performance objective. Each licensee shall establish, implement, and maintain a security program that is designed to monitor and, without delay, detect, assess, and respond to an actual or attempted unauthorized access to category 1 or category 2 quantities of radioactive material.

(3) Program features. Each licensee's security program must include the program features, as appropriate, described in subsections (j) - (p) of this section.

(j) General security program requirements.

(1) Security plan.

(A) Each licensee identified in subsection (i)(1) of this section shall develop a written security plan specific to its facilities and operations. The purpose of the security plan is to establish the licensee's overall security strategy to ensure the integrated and effective functioning of the security program required by subsection (i) of this section, this subsection, and subsections (k) - (q) of this section [this subsection]. The security plan must, at a minimum:

(i) describe [Describe] the measures and strategies used to implement the requirements of subsection (i) of this section, this subsection, and subsections (k) - (q) of this section [this subsection]; and

(ii) identify [Identify] the security resources, equipment, and technology used to satisfy the requirements of subsection (i) of this section, this subsection, and subsections (k) - (q) of this section [this subsection].

(B) The security plan must be reviewed and approved by the individual with overall responsibility for the security program.

(C) A licensee shall revise its security plan as necessary to ensure the effective implementation of the executive director's requirements. The licensee shall ensure that:

(i) the [The] revision has been reviewed and approved by the individual with overall responsibility for the security program; and

(ii) the [The] affected individuals are instructed on the revised plan before the changes are implemented.

(D) The licensee shall retain a copy of the current security plan as a record for three years after the security plan is no longer required. If any portion of the plan is superseded, the licensee shall retain the superseded material for three years after the record is superseded.

(2) Implementing procedures.

(A) The licensee shall develop and maintain written procedures that document how the requirements of subsection (i) of this section, this subsection, and subsections (k) - (q) of this section and the security plan will be met.

(B) The implementing procedures and revisions to these procedures must be approved in writing by the individual with overall responsibility for the security program.

(C) The licensee shall retain a copy of the current procedure as a record for three years after the procedure is no longer needed. Superseded portions of the procedure must be retained for three years after the record is superseded.

(3) Training.

(A) Each licensee shall conduct training to ensure that those individuals implementing the security program possess and maintain the knowledge, skills, and abilities to carry out their assigned duties and responsibilities effectively. The training must include instruction in:

(i) the [The] licensee's security program and procedures to secure category 1 or category 2 quantities of radioactive material and the purposes and functions of the security measures employed;

(ii) the [The] responsibility to report promptly to the licensee any condition that causes or may cause a violation of the requirements of the commission, the NRC, or any Agreement State;

(iii) the [The] responsibility of the licensee to report promptly to the LLEA and licensee any actual or attempted theft, sabotage, or diversion of category 1 or category 2 quantities of radioactive material; and

(iv) the [The] appropriate response to security alarms.

(B) In determining those individuals who shall be trained on the security program, the licensee shall consider each individual's assigned activities

during authorized use and response to potential situations involving actual or attempted theft, diversion, or sabotage of category 1 or category 2 quantities of radioactive material. The extent of the training must be commensurate with the individual's potential involvement in the security of category 1 or category 2 quantities of radioactive material.

(C) Refresher training must be provided at a frequency not to exceed 12 months and when significant changes have been made to the security program. This training must include:

(i) review [Review] of the training requirements of this paragraph and any changes made to the security program since the last training;

(ii) reports [Reports] on any relevant security issues, problems, and lessons learned;

(iii) relevant [Relevant] results of commission [NRC] inspections; and

(iv) relevant [Relevant] results of the licensee's program review and testing and maintenance.

(D) The licensee shall maintain records of the initial and refresher training for three years from the date of the training. The training records must

include dates of the training, topics covered, a list of licensee personnel in attendance, and related information.

(4) Protection of information.

(A) Licensees authorized to possess category 1 or category 2 quantities of radioactive material shall limit access to and unauthorized disclosure of their security plan, implementing procedures, and the list of individuals that have been approved for unescorted access.

(B) Efforts to limit access shall include the development, implementation, and maintenance of written policies and procedures for controlling access to, and for proper handling and protection against unauthorized disclosure of, the security plan and implementing procedures.

(C) Before granting an individual access to the security plan or implementing procedures, licensees shall:

(i) evaluate [Evaluate] an individual's need to know the security plan or implementing procedures; and

(ii) if [If] the individual has not been authorized for unescorted access to category 1 or category 2 quantities of radioactive material, safeguards information, or safeguards information-modified handling, the licensee

must complete a background investigation to determine the individual's trustworthiness and reliability. A trustworthiness and reliability determination shall be conducted by the reviewing official and shall include the background investigation elements contained in subsection (d)(1)(B) - (G) of this section.

(D) Licensees need not subject the following individuals to the background investigation elements for protection of information:

(i) the [The] categories of individuals listed in subsection (f)(1) of this section; or

(ii) security [Security] service provider employees, provided written verification that the employee has been determined to be trustworthy and reliable, by the required background investigation in subsection (d)(1)(B) - (G) of this section, has been provided by the security service provider.

(E) The licensee shall document the basis for concluding that an individual is trustworthy and reliable and should be granted access to the security plan or implementing procedures.

(F) Licensees shall maintain a list of persons currently approved for access to the security plan or implementing procedures. When a licensee determines that a person no longer needs access to the security plan or implementing procedures or no longer meets the access authorization requirements for access to the

information, the licensee shall remove the person from the approved list as soon as possible, but no-later-than seven working days, and take prompt measures to ensure that the individual is unable to obtain the security plan or implementing procedures.

(G) When not in use, the licensee shall store its security plan and implementing procedures in a manner to prevent unauthorized access. Information stored in non-removable electronic form must be password protected.

(H) The licensee shall retain as a record for three years after the document is no longer needed:

(i) a [A] copy of the information protection procedures; and

(ii) the [The] list of individuals approved for access to the security plan or implementing procedures.

(k) LLEA coordination.

(1) A licensee subject to subsections (i) and (j) of this section, this subsection, and subsections (l) - (q) of this section shall coordinate, to the extent practicable, with an LLEA for responding to threats to the licensee's facility, including any necessary armed response. The information provided to the LLEA must include:

(A) a [A] description of the facilities and the category 1 and category 2 quantities of radioactive materials along with a description of the licensee's security measures that have been implemented to comply with subsections (i) and (j) of this section, this subsection, and subsections (l) - (q) of this section; and

(B) a [A] notification that the licensee will request a timely armed response by the LLEA to any actual or attempted theft, sabotage, or diversion of category 1 or category 2 quantities of material.

(2) The licensee shall notify the executive director within three business days if:

(A) the [The] LLEA has not responded to the request for coordination within 60 days of the coordination request; or

(B) the [The] LLEA notifies the licensee that the LLEA does not plan to participate in coordination activities.

(3) The licensee shall document its efforts to coordinate with the LLEA. The documentation must be kept for three years.

(4) The licensee shall coordinate with the LLEA at least every 12 months, or when changes to the facility design or operation adversely affect the potential vulnerability of the licensee's material to theft, sabotage, or diversion.

(l) Security zones.

(1) Licensees shall ensure that all aggregated category 1 and category 2 quantities of radioactive material are used or stored within licensee established security zones. Security zones may be permanent or temporary.

(2) Temporary security zones must be established as necessary to meet the licensee's transitory or intermittent business activities, such as periods of maintenance, source delivery, and source replacement.

(3) Security zones must, at a minimum, allow unescorted access only to approved individuals through:

(A) isolation [Isolation] of category 1 and category 2 quantities of radioactive materials by the use of continuous physical barriers that allow access to the security zone only through established access control points. A physical barrier is a natural or man-made structure or formation sufficient for the isolation of the category 1 or category 2 quantities of radioactive material within a security zone; or

(B) direct [Direct] control of the security zone by approved individuals at all times; or

(C) a [A] combination of continuous physical barriers and direct control.

(4) For category 1 quantities of radioactive material during periods of maintenance, source receipt, preparation for shipment, installation, or source removal or exchange, the licensee shall, at a minimum, provide sufficient individuals approved for unescorted access to maintain continuous surveillance of sources in temporary security zones and in any security zone in which physical barriers or intrusion detection systems have been disabled to allow such activities.

(5) Individuals not approved for unescorted access to category 1 or category 2 quantities of radioactive material must be escorted by an approved individual when in a security zone.

(m) Monitoring, detection, and assessment.

(1) Monitoring and detection.

(A) Licensees shall establish and maintain the capability to continuously monitor and detect without delay all unauthorized entries into its security zones. Licensees shall provide the means to maintain continuous monitoring and detection capability in the event of a loss of the primary power source or provide for an alarm and response in the event of a loss of the capability to continuously monitor and detect unauthorized entries.

(B) Monitoring and detection must be performed by:

(i) A monitored intrusion detection system that is linked to an onsite or offsite central monitoring facility;

(ii) Electronic devices for intrusion detection alarms that will alert nearby facility personnel;

(iii) A monitored video surveillance system;

(iv) Direct visual surveillance by approved individuals located within the security zone; or

(v) Direct visual surveillance by a licensee designated individual located outside the security zone.

(C) A licensee subject to subsections (i) - (l) of this section, this subsection, and subsections (n) - (q) of this section shall also have a means to detect unauthorized removal of the radioactive material from the security zone. This detection capability must provide:

(i) For category 1 quantities of radioactive material, immediate detection of any attempted unauthorized removal of the radioactive

material from the security zone. Such immediate detection capability must be provided by:

(I) electronic [Electronic] sensors linked to an alarm;

(II) continuous [Continuous] monitored video surveillance; or

(III) direct [Direct] visual surveillance.

(ii) For category 2 quantities of radioactive material, weekly verification through physical checks, tamper indicating devices, use, or other means to ensure that the radioactive material is present.

(2) Assessment. Licensees shall immediately assess each actual or attempted unauthorized entry into the security zone to determine whether the unauthorized access was an actual or attempted theft, sabotage, or diversion.

(3) Personnel communications and data transmission. For personnel and automated or electronic systems supporting the licensee's monitoring, detection, and assessment systems, licensees shall:

(A) maintain [Maintain] continuous capability for personnel communication and electronic data transmission and processing among site security systems; and

(B) provide [Provide] an alternative communication capability for personnel, and an alternative data transmission and processing capability, in the event of a loss of the primary means of communication or data transmission and processing. Alternative communications and data transmission systems may not be subject to the same failure modes as the primary systems.

(4) Response. Licensees shall immediately respond to any actual or attempted unauthorized access to the security zones, or actual or attempted theft, sabotage, or diversion of category 1 or category 2 quantities of radioactive material at licensee facilities or temporary job sites. For any unauthorized access involving an actual or attempted theft, sabotage, or diversion of category 1 or category 2 quantities of radioactive material, the licensee's response shall include requesting, without delay, an armed response from the LLEA.

(n) Maintenance and testing.

(1) Each licensee subject to subsections (i) - (m) of this section, this subsection, and subsections (o) - (q) of this section shall implement a maintenance and testing program to ensure that intrusion alarms, associated communication systems, and other physical components of the systems used to secure or detect unauthorized

access to radioactive material are maintained in operable condition and capable of performing their intended function when needed. The equipment relied on to meet the security requirements of this section must be inspected and tested for operability and performance at the manufacturer's suggested frequency. If there is no manufacturer's suggested frequency, the testing must be performed at least annually, not to exceed 12 months.

(2) The licensee shall maintain records on the maintenance and testing activities for three years.

(o) Requirements for mobile devices. Each licensee that possesses mobile devices containing category 1 or category 2 quantities of radioactive material must:

(1) have [Have] two independent physical controls that form tangible barriers to secure the material from unauthorized removal when the device is not under direct control and constant surveillance by the licensee; and

(2) for [For] devices in or on a vehicle or trailer, unless the health and safety requirements for a site prohibit the disabling of the vehicle, the licensee shall utilize a method to disable the vehicle or trailer when not under direct control and constant surveillance by the licensee. Licensees shall not rely on the removal of an ignition key to meet this requirement.

(p) Security program review.

(1) Each licensee shall be responsible for the continuing effectiveness of the security program. Each licensee shall ensure that the security program is reviewed to confirm compliance with the requirements of subsections (i) - (o) of this section, this subsection, and subsection (q) of this section and that comprehensive actions are taken to correct any noncompliance that is identified. The review must include the radioactive material security program content and implementation. Each licensee shall periodically (at least annually) review the security program content and implementation.

(2) The results of the review, along with any recommendations, must be documented. Each review report must identify conditions that are adverse to the proper performance of the security program, the cause of the condition(s), and, when appropriate, recommend corrective actions, and corrective actions taken. The licensee shall review the findings and take any additional corrective actions necessary to preclude repetition of the condition, including reassessment of the deficient areas where indicated.

(3) The licensee shall maintain the review documentation for three years.

(q) Reporting of events.

(1) The licensee shall immediately notify the LLEA after determining that an unauthorized entry resulted in an actual or attempted theft, sabotage, or diversion

of a category 1 or category 2 quantity of radioactive material. As soon as possible after initiating a response, but not at the expense of causing delay or interfering with the LLEA response to the event, the licensee shall notify the Office of Compliance and Enforcement 24-hour Emergency Response at 1-800-832-8224 [and the NRC's Operations Center at (301) 816-5100]. In no case shall the notification to the commission or the NRC be later than four hours after the discovery of any attempted or actual theft, sabotage, or diversion.

(2) The licensee shall assess any suspicious activity related to possible theft, sabotage, or diversion of category 1 or category 2 quantities of radioactive material and notify the LLEA as appropriate. As soon as possible but not later than four hours after notifying the LLEA, the licensee shall notify the Office of Compliance and Enforcement 24-hour Emergency Response at 1-800-832-8224 [and the NRC's Operations Center at (301) 816-5100].

(3) The initial telephonic notification required by paragraph (1) of this subsection must be followed, within a period of 30 days, by a written report submitted to the executive director [and the NRC by an appropriate method listed in 10 CFR §37.7]. The report must include sufficient information for commission [NRC] analysis and evaluation, including identification of any necessary corrective actions to prevent future instances.

(r) Additional requirements for transfer of category 1 and category 2 quantities of radioactive material. A licensee transferring a category 1 or category 2 quantity of

radioactive material to a licensee of the commission, the NRC, or an Agreement State shall meet the license verification provisions listed in this subsection instead of those listed in §336.331(d) of this title (relating to Transfer of Radioactive Material):

(1) Any licensee transferring category 1 quantities of radioactive material to a licensee of the commission, the NRC, or an Agreement State, prior to conducting such transfer, shall verify with the NRC's license verification system or the license issuing authority that the transferee's license authorizes the receipt of the type, form, and quantity of radioactive material to be transferred and that the licensee is authorized to receive radioactive material at the location requested for delivery. If the verification is conducted by contacting the license issuing authority, the transferor shall document the verification. For transfers within the same organization, the licensee does not need to verify the transfer.

(2) Any licensee transferring category 2 quantities of radioactive material to a licensee of the commission, the NRC, or an Agreement State, prior to conducting such transfer, shall verify with the NRC's license verification system or the license issuing authority that the transferee's license authorizes the receipt of the type, form, and quantity of radioactive material to be transferred. If the verification is conducted by contacting the license issuing authority, the transferor shall document the verification. For transfers within the same organization, the licensee does not need to verify the transfer.

(3) In an emergency where the licensee cannot reach the license issuing authority and the license verification system is nonfunctional, the licensee may accept a written certification by the transferee that it is authorized by license to receive the type, form, and quantity of radioactive material to be transferred. The certification must include the license number, current revision number, issuing agency, expiration date, and for a category 1 shipment the authorized address. The licensee shall keep a copy of the certification. The certification must be confirmed by use of the NRC's license verification system or by contacting the license issuing authority by the end of the next business day.

(4) The transferor shall keep a copy of the verification documentation as a record for three years.

(s) Applicability of physical protection of category 1 and category 2 quantities of radioactive material during transit. The shipping licensee shall be responsible for meeting the requirements of subsection (r) of this section, this subsection, and subsections (t) - (w) of this section unless the receiving licensee has agreed in writing to arrange for the in-transit physical protection required under subsection (r) of this section, this subsection, and subsections (t) - (w) of this section.

(t) Preplanning and coordination of shipment of category 1 or category 2 quantities of radioactive material.

(1) Each licensee that plans to transport, or deliver to a carrier for transport, licensed material that is a category 1 quantity of radioactive material outside the confines of the licensee's facility or other place of use or storage shall:

(A) preplan [Preplan] and coordinate shipment arrival and departure times with the receiving licensee;

(B) preplan [Preplan] and coordinate shipment information with the governor or the governor's designee of any state through which the shipment will pass to:

(i) discuss [Discuss] the state's intention to provide law enforcement escorts; and

(ii) identify [Identify] safe havens; and

(C) document [Document] the preplanning and coordination activities.

(2) Each licensee that plans to transport, or deliver to a carrier for transport, licensed material that is a category 2 quantity of radioactive material outside the confines of the licensee's facility or other place of use or storage shall coordinate the shipment no-later-than arrival time and the expected shipment arrival with the receiving licensee. The licensee shall document the coordination activities.

(3) Each licensee who receives a shipment of a category 2 quantity of radioactive material shall confirm receipt of the shipment with the originator. If the shipment has not arrived by the no-later-than arrival time, the receiving licensee shall notify the originator.

(4) Each licensee, who transports or plans to transport a shipment of a category 2 quantity of radioactive material, and determines that the shipment will arrive after the no-later-than arrival time provided pursuant to paragraph (2) of this subsection, shall promptly notify the receiving licensee of the new no-later-than arrival time.

(5) The licensee shall retain a copy of the documentation for preplanning and coordination and any revision thereof as a record for three years.

(u) Advance notification of shipment of category 1 quantities of radioactive material. As specified in paragraphs (1) and (2) of this subsection, each licensee shall provide advance notification to the NRC and the governor of a state, or the governor's designee, of the shipment of licensed material in a category 1 quantity, through or across the boundary of the state, before the transport or delivery to a carrier for transport of the licensed material outside the confines of the licensee's facility or other place of use or storage.

(1) Procedures for submitting advance notification.

(A) The notification must be made to the commission [NRC] and to the office of each appropriate governor or governor's designee. The contact information, including telephone and mailing addresses, of governors and governors' designees, is available on the NRC's website at

<https://scp.nrc.gov/special/designee.pdf> [<http://nrc-stp.ornl.gov/special/designee.pdf>].

A list of the contact information is also available upon request from the Director, Division of Material, State, Tribal, and Rulemaking Programs, Office of Nuclear Material Safety and Safeguards [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.

[Notifications to the NRC must be to the NRC's Director, Division of Security Policy, Office of Nuclear Security and Incident Response, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001. The notification to the NRC may be made by e-mail to RAMQC_SHIPMENTS@nrc.gov or by fax to (301) 816-5151.]

(B) A notification delivered by mail must be postmarked at least seven days before transport of the shipment commences at the shipping facility.

(C) A notification delivered by any means other than mail must reach the commission [NRC] at least four days before the transport of the shipment commences and must reach the office of the governor or the governor's designee at least four days before transport of a shipment within or through the state.

(2) Information to be furnished in advance notification of shipment. Each advance notification of shipment of category 1 quantities of radioactive material must contain the following information, if available at the time of notification:

(A) the [The] name, address, and telephone number of the shipper, carrier, and receiver of the category 1 radioactive material;

(B) the [The] license numbers of the shipper and receiver;

(C) a [A] description of the radioactive material contained in the shipment, including the radionuclides and quantity;

(D) the [The] point of origin of the shipment and the estimated time and date that shipment will commence;

(E) the [The] estimated time and date that the shipment is expected to enter each state along the route;

(F) the [The] estimated time and date of arrival of the shipment at the destination; and

(G) a [A] point of contact, with a telephone number, for current shipment information.

(3) Revision notice.

(A) The licensee shall provide any information not previously available at the time of the initial notification, as soon as the information becomes available but not later than commencement of the shipment, to the governor of the state or the governor's designee and to the commission [NRC's Director of Nuclear Security, Office of Nuclear Security and Incident Response, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001].

(B) A licensee shall promptly notify the governor of the state or the governor's designee of any changes to the information provided in accordance with paragraph (2) of this subsection and subparagraph (A) of this paragraph. The licensee shall also immediately notify the commission [NRC's Director, Division of Security Policy, Office of Nuclear Security and Incident Response, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001,] of any such changes.

(4) Cancellation notice. Each licensee who cancels a shipment for which advance notification has been sent shall send a cancellation notice to the governor of each state or to the governor's designee previously notified and to the commission [NRC's Director, Division of Security Policy, Office of Nuclear Security and Incident Response, United States Nuclear Regulatory Commission, Washington, DC 20555-0001]. The licensee shall send the cancellation notice before the shipment would have commenced or as soon thereafter as possible. The licensee shall state in the notice that it is a cancellation and identify the advance notification that is being cancelled.

(5) Records. The licensee shall retain a copy of the advance notification and any revision and cancellation notices as a record for three years.

(6) Protection of information. State officials, State employees, and the other individuals, whether or not licensees of the commission, NRC, or an Agreement State, who receive schedule information of the kind specified in paragraph (2) of this subsection shall protect that information against unauthorized disclosure as specified in subsection (j)(4) of this section.

(v) Requirements for physical protection of category 1 and category 2 quantities of radioactive material during shipment.

(1) Shipments by road.

(A) Each licensee who transports, or delivers to a carrier for transport, in a single shipment, a category 1 quantity of radioactive material shall:

(i) Ensure that movement control centers are established that maintain position information from a remote location. These control centers must monitor shipments 24 hours a day, seven days a week, and have the ability to communicate immediately, in an emergency, with the appropriate law enforcement agencies.

(ii) Ensure that redundant communications are established that allow the transport to contact the escort vehicle (when used) and movement control center at all times. Redundant communications may not be subject to the same interference factors as the primary communication.

(iii) Ensure that shipments are continuously and actively monitored by a telemetric position monitoring system or an alternative tracking system reporting to a movement control center. A movement control center must provide positive confirmation of the location, status, and control over the shipment. The movement control center must be prepared to promptly implement preplanned procedures in response to deviations from the authorized route or a notification of actual, attempted, or suspicious activities related to the theft, loss, or diversion of a shipment. These procedures will include, but not be limited to, the identification of and contact information for the appropriate LLEA along the shipment route.

(iv) Provide an individual to accompany the driver for those highway shipments with a driving time period greater than the maximum number of allowable hours of service in a 24-hour duty day as established by the Department of Transportation Federal Motor Carrier Safety Administration. The accompanying individual may be another driver.

(v) Develop written normal and contingency procedures to address:

(I) notifications [Notifications] to the communication center and law enforcement agencies;

(II) communication [Communication] protocols.

Communication protocols must include a strategy for the use of authentication codes and duress codes and provisions for refueling or other stops, detours, and locations where communication is expected to be temporarily lost;

(III) loss [Loss] of communications; and

(IV) responses [Responses] to an actual or attempted theft or diversion of a shipment.

(vi) Each licensee who makes arrangements for the shipment of category 1 quantities of radioactive material shall ensure that drivers, accompanying personnel, and movement control center personnel have access to the normal and contingency procedures.

(B) Each licensee that transports category 2 quantities of radioactive material shall maintain constant control and/or surveillance during transit and have the capability for immediate communication to summon appropriate response or assistance.

(C) Each licensee who delivers to a carrier for transport, in a single shipment, a category 2 quantity of radioactive material shall:

(i) use [Use] carriers that have established package tracking systems. An established package tracking system is a documented, proven, and reliable system routinely used to transport objects of value. In order for a package tracking system to maintain constant control and/or surveillance, the package tracking system must allow the shipper or transporter to identify when and where the package was last and when it should arrive at the next point of control;

(ii) use [Use] carriers that maintain constant control and/or surveillance during transit and have the capability for immediate communication to summon appropriate response or assistance; and

(iii) use [Use] carriers that have established tracking systems that require an authorized signature prior to releasing the package for delivery or return.

(2) Shipments by rail.

(A) Each licensee who transports, or delivers to a carrier for transport, in a single shipment, a category 1 quantity of radioactive material shall:

(i) Ensure that rail shipments are monitored by a telemetric position monitoring system or an alternative tracking system reporting to the licensee,

third-party, or railroad communications center. The communications center shall provide positive confirmation of the location of the shipment and its status. The communications center shall implement preplanned procedures in response to deviations from the authorized route or to a notification of actual, attempted, or suspicious activities related to the theft or diversion of a shipment. These procedures will include, but not be limited to, the identification of and contact information for the appropriate LLEA along the shipment route.

(ii) Ensure that periodic reports to the communications center are made at preset intervals.

(B) Each licensee who transports, or delivers to a carrier for transport, in a single shipment, a category 2 quantity of radioactive material shall:

(i) use [Use] carriers that have established package tracking systems. An established package tracking system is a documented, proven, and reliable system routinely used to transport objects of value. In order for a package tracking system to maintain constant control and/or surveillance, the package tracking system must allow the shipper or transporter to identify when and where the package was last and when it should arrive at the next point of control;

(ii) use [Use] carriers that maintain constant control and/or surveillance during transit and have the capability for immediate communication to summon appropriate response or assistance; and

(iii) use [Use] carriers that have established tracking systems that require an authorized signature prior to releasing the package for delivery or return.

(3) Investigations. Each licensee who makes arrangements for the shipment of category 1 quantities of radioactive material shall immediately conduct an investigation upon the discovery that a category 1 shipment is lost or missing. Each licensee who makes arrangements for the shipment of category 2 quantities of radioactive material shall immediately conduct an investigation, in coordination with the receiving licensee, of any shipment that has not arrived by the designated no-later-than arrival time.

(w) Reporting of events.

(1) The shipping licensee shall notify the appropriate LLEA and[,] the Office of Compliance and Enforcement 24-hour Emergency Response at 1-800-832-8224[, and the NRC's Operations Center at (301) 816-5100] within one hour of its determination that a shipment of category 1 quantities of radioactive material is lost or missing. The appropriate LLEA would be the law enforcement agency in the area of the shipment's last confirmed location. During the investigation required by subsection (v)(3) of this section, the shipping licensee will provide agreed upon updates to the executive director [and the NRC's Operations Center]on the status of the investigation.

(2) The shipping licensee shall notify the Office of Compliance and Enforcement 24-hour Emergency Response at 1-800-832-8224 [and the NRC's Operations Center at (301) 816-5100] within four hours of its determination that a shipment of category 2 quantities of radioactive material is lost or missing. If, after 24 hours of its determination that the shipment is lost or missing, the radioactive material has not been located and secured, the licensee shall immediately notify the executive director [and the NRC's Operations Center].

(3) The shipping licensee shall notify the designated LLEA along the shipment route as soon as possible upon discovery of any actual or attempted theft or diversion of a shipment or suspicious activities related to the theft or diversion of a shipment of a category 1 quantity of radioactive material. As soon as possible after notifying the LLEA, the licensee shall notify the Office of Compliance and Enforcement 24-hour Emergency Response at 1-800-832-8224 [and the NRC's Operations Center at (301) 816-5100] upon discovery of any actual or attempted theft or diversion of a shipment or any suspicious activity related to the shipment of category 1 radioactive material.

(4) The shipping licensee shall notify the Office of Compliance and Enforcement 24-hour Emergency Response at 1-800-832-8224 [and the NRC's Operations Center at (301) 816-5100] as soon as possible upon discovery of any actual or attempted theft or diversion of a shipment or any suspicious activity related to the shipment, of a category 2 quantity of radioactive material.

(5) The shipping licensee shall notify the Office of Compliance and Enforcement 24-hour Emergency Response at 1-800-832-8224[, the NRC's Operations Center at (301) 816-5100,] and the LLEA as soon as possible upon recovery of any lost or missing category 1 quantities of radioactive material.

(6) The shipping licensee shall notify the Office of Compliance and Enforcement 24-hour Emergency Response at 1-800-832-8224 [and the NRC's Operations Center at (301) 816-5100] as soon as possible upon recovery of any lost or missing category 2 quantities of radioactive material.

(7) The initial telephonic notification required by paragraphs (1) - (4) of this subsection must be followed within a period of 30 days by a written report submitted to the executive director [and NRC by an appropriate method listed in 10 CFR §37.7]. A written report is not required for notifications on suspicious activities required by paragraphs (3) and (4) of this subsection. [In addition, the licensee shall provide one copy of the written report addressed to the Director, Division of Security Policy, Office of Nuclear Security and Incident Response, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001.] The report must set forth the following information:

(A) a [A] description of the licensed material involved, including kind, quantity, and chemical and physical form;

(B) a [A] description of the circumstances under which the loss or theft occurred;

(C) a [A] statement of disposition, or probable disposition, of the licensed material involved;

(D) actions [Actions] that have been taken, or will be taken, to recover the material; and

(E) procedures [Procedures] or measures that have been, or will be, adopted to ensure against a recurrence of the loss or theft of licensed material.

(8) Subsequent to filing the written report, the licensee shall also report any additional substantive information on the loss or theft within 30 days after the licensee learns of such information.

(x) Form of records. Each record required by this section must be legible throughout the retention period specified in regulation by the licensing authority. The record may be the original or a reproduced copy or a microform, provided that the copy or microform is authenticated by authorized personnel and that the microform is capable of producing a clear copy throughout the required retention period. The record may also be stored in electronic media with the capability for producing legible, accurate, and complete records during the required retention period. Records such as letters, drawings, and specifications, must include all pertinent information such as

stamps, initials, and signatures. The licensee shall maintain adequate safeguards against tampering with and loss of records.

(y) Record retention. Licensees shall maintain the records that are required in this section for the period specified by the appropriate regulation. If a retention period is not otherwise specified, these records must be retained until the executive director terminates the facility's license. All records related to this section may be destroyed upon executive director termination of the facility license.

(z) Category 1 and category 2 radioactive materials. The terabecquerel (TBq) values are the regulatory standard. The curie (Ci) values specified are obtained by converting from the TBq value. The Ci values are provided for practical usefulness only.

Figure: 30 TAC §336.357(z)

Category 1 and Category 2 Threshold				
Radioactive Material	Category 1 (TBq)	Category 1 (Ci)	Category 2 (TBq)	Category 2 (Ci)
Americium-241	60	1,620	0.6	16.2
Americium-241/Be	60	1,620	0.6	16.2
Californium-252	20	540	0.2	5.40
Cobalt-60	30	810	0.3	8.10
Curium-244	50	1,350	0.5	13.5
Cesium-137	100	2,700	1	27.0
Gadolinium-153	1,000	27,000	10	270

Iridium-192	80	2,160	0.8	21.6
Plutonium-238	60	1,620	0.6	16.2
Plutonium-239/Be	60	1,620	0.6	16.2
Promethium-147	40,000	1,080,000	400	10,800
Radium-226	40	1,080	0.4	10.8
Selenium-75	200	5,400	2	54.0
Strontium-90	1,000	27,000	10	270
Thulium-170	20,000	540,000	200	5,400
Ytterbium-169	300	8,100	3	81.0

Note: Calculations Concerning Multiple Sources or Multiple Radionuclides

The "sum of fractions" methodology for evaluating combinations of multiple sources or multiple radionuclides is to be used in determining whether a location meets or exceeds the threshold and is thus subject to the requirements of this section.

I. If multiple sources of the same radionuclide and/or multiple radionuclides are aggregated at a location, the sum of the ratios of the total activity of each of the radionuclides must be determined to verify whether the activity at the location is less than the category 1 or category 2 thresholds of Table 1, as appropriate. If the calculated sum of the ratios, using the equation below, is greater than or equal to 1.0, then the applicable requirements of this section apply.

II. First determine the total activity for each radionuclide from Table 1. This is done by adding the activity of each individual source, material in any device, and any loose or bulk material that contains the radionuclide. Then use the equation below to calculate the sum of the ratios by inserting the total activity of the applicable radionuclides from Table 1 in the numerator of the equation and the corresponding threshold activity from Table 1 in the denominator of the equation. Calculations must be performed in metric values (i.e., TBq) and the numerator and denominator values must be in the same units.

R_1 = total activity for radionuclide 1

R_2 = total activity for radionuclide 2

R_N = total activity for radionuclide n

AR_1 = activity threshold for radionuclide 1

AR_2 = activity threshold for radionuclide 2

AR_N = activity threshold for radionuclide n

$$\sum_i^n \left[\frac{R_1}{AR_1} + \frac{R_2}{AR_2} + \frac{R_n}{AR_n} \right] \geq 1.0$$

**SUBCHAPTER L: LICENSING OF SOURCE MATERIAL RECOVERY AND BY-PRODUCT
MATERIAL DISPOSAL FACILITIES
§336.1105, §336.1113, §336.1127**

§336.1105. Definitions.

The following words and terms, when used in this subchapter, have the following meanings, unless the context clearly indicates otherwise.

(1) Aquifer--A geologic formation, group of formations, or part of a formation capable of yielding a significant amount of groundwater to wells or springs. Any saturated zone created by uranium or thorium recovery operations would not be considered an aquifer unless the zone is or potentially is:

(A) hydraulically interconnected to a natural aquifer;

(B) capable of discharge to surface water; or

(C) reasonably accessible because of migration beyond the vertical projection of the boundary of the land transferred for long-term government ownership and care in accordance with §336.1131 of this title (relating to Land Ownership of By-Product Material Disposal Sites).

(2) As expeditiously as practicable considering technological feasibility--
As quickly as possible considering the physical characteristics of the by-product

material and the site, the limits of "available technology" (as defined in this section), the need for consistency with mandatory requirements of other regulatory programs, and "factors beyond the control of the licensee" (as defined in this section). The phrase permits consideration of the cost of compliance only to the extent specifically provided for by use of the term "Available technology."

(3) Available technology--Technologies and methods for emplacing a final radon barrier on by-product material piles or impoundments. This term must not be construed to include extraordinary measures or techniques that would impose costs that are grossly excessive as measured by practice within the industry (or one that is reasonably analogous), (for example, by way of illustration only, unreasonable overtime, staffing, or transportation requirements, etc., considering normal practice in the industry; laser fusion of soils; etc.), provided there is reasonable progress toward emplacement of the final radon barrier. To determine grossly excessive costs, the relevant baseline against which costs must be compared is the cost estimate for tailings impoundment closure contained in the licensee's approved reclamation plan, but costs beyond these estimates shall not automatically be considered grossly excessive.

(4) By-product material--Tailings or wastes produced by or resulting from the extraction or concentration of uranium or thorium from any ore processed primarily for its source material content, including discrete surface wastes resulting from uranium solution extraction processes. Underground ore bodies depleted by such

solution extraction operations do not constitute "by-product material" within this definition.

(5) By-product material disposal cell--A man-made excavation and/or construction designed, sited, and built in accordance with the requirements of §336.1129 of this title (relating to Technical Requirements) for the purpose of disposal of by-product material.

(6) By-product material pond--A man-made excavation designed, constructed, and sited in accordance with the requirements of §336.1129 of this title (relating to Technical Requirements).

(7) Capable fault--As used in this section, "Capable fault" has the same meaning as defined in Section III(g) of Appendix A of Title 10 Code of Federal Regulations (CFR) Part 100.

(8) Closure--The post-operational activities to decontaminate and decommission the buildings and site used to produce by-product materials and/or reclaim the tailings or disposal area, including groundwater restoration, if needed.

(9) Closure plan--The plan approved by the agency to accomplish closure. The closure plan consists of a decommissioning plan and may also include a reclamation plan.

(10) Commencement of construction--Any clearing of land, excavation, or other substantial action that would adversely affect the environment of a site, but does not include changes desirable for the temporary use of the land for public recreational uses, necessary borings to determine site characteristics or other preconstruction monitoring to establish background information related to the suitability of a site, or to the protection of the environment.

(11) Compliance period--The period of time that begins when the agency sets secondary groundwater protection standards and ends when the owner or operator's license is terminated and the site is transferred to the state or federal government for long-term care, if applicable.

(12) Decommissioning plan--The plan approved by the agency to accomplish decommissioning. Decommission is defined in §336.2(29) of this title (relating to Definitions).

(13) Dike--An embankment or ridge of either natural or man-made materials used to prevent the movement of liquids, sludges, solids, or other materials.

(14) Disposal area--The area containing by-product materials to which the requirements of §336.1129(p) - (aa) of this title (relating to Technical Requirements) apply.

(15) Existing portion--As used in §336.1129(i)(1) of this title (relating to Technical Requirements), "existing portion" is that land surface area of an existing surface impoundment on which significant quantities of uranium or thorium by-product materials had been placed prior to September 30, 1983.

(16) Factors beyond the control of the licensee--Factors proximately causing delay in meeting the schedule in the applicable reclamation plan for the timely emplacement of the final radon barrier notwithstanding the good faith efforts of the licensee to complete the barrier in compliance with §336.1129(x) of this title (relating to Technical Requirements). These factors may include, but are not limited to:

(A) physical conditions at the site;

(B) inclement weather or climatic conditions;

(C) an act of God;

(D) an act of war;

(E) a judicial or administrative order or decision, or change to the statutory, regulatory, or other legal requirements applicable to the licensee's facility that would preclude or delay the performance of activities required for compliance;

(F) labor disturbances;

(G) any modifications, cessation or delay ordered by state, federal, or local agencies;

(H) delays beyond the time reasonably required in obtaining necessary government permits, licenses, approvals, or consent for activities described in the reclamation plan proposed by the licensee that result from government agency failure to take final action after the licensee has made a good faith, timely effort to submit legally sufficient applications, responses to requests (including relevant data requested by the agencies), or other information, including approval of the reclamation plan; and

(I) an act or omission of any third party over whom the licensee has no control.

(17) Final radon barrier--The earthen cover (or approved alternative cover) over by-product material constructed to comply with §336.1129(p) - (aa) of this title (relating to Technical Requirements) (excluding erosion protection features).

(18) Groundwater--Water below the land surface in a zone of saturation. For purposes of this subchapter, groundwater is the water contained within an aquifer as defined in this section.

(19) Hazardous constituent--Subject to §336.1129(j)(5) of this title (relating to Technical Requirements), "hazardous constituent" is a constituent that meets all three of the following tests:

(A) the constituent is reasonably expected to be in or derived from the by-product material in the disposal area;

(B) the constituent has been detected in the groundwater in the uppermost aquifer; and

(C) the constituent is listed in 10 Code of Federal Regulations Part 40, Appendix A, Criterion 13.

(20) In situ leach--Refers to the actual oxidation and dissolution of uranium in an underground formation.

(21) In situ recovery--Refers to the process of stripping, precipitating, dewatering, and drying uranium in a surface processing plant.

(22) Leachate--Any liquid, including any suspended or dissolved components in the liquid, that has percolated through or drained from the by-product material.

(23) Licensed site--The area contained within the boundary of a location under the control of persons generating or storing by-product materials under a license.

(24) Liner--A continuous layer of natural or man-made materials, beneath or on the sides of a surface impoundment that restricts the downward or lateral escape of by-product material, hazardous constituents, or leachate.

(25) Maximum credible earthquake--That earthquake that would cause the maximum vibratory ground motion based upon an evaluation of earthquake potential considering the regional and local geology and seismology and specific characteristics of local subsurface material.

(26) Milestone--An action or event that is required to occur by an enforceable date.

(27) Operation--

(A) The period of time during which a by-product material disposal area is being used for the continued placement of by-product material or is in standby status for such placement. A disposal area is in operation from the day that by-product material is first placed in it until the day final closure begins; and

(B) The period of time during which an in situ leach uranium recovery operation is actively leaching or recovering uranium.

(28) Point of compliance--The site-specific location in the uppermost aquifer where the groundwater protection standard shall be met. The objective in selecting the point of compliance is to provide the earliest practicable warning that an impoundment is releasing hazardous constituents to the groundwater. The point of compliance is selected to provide prompt indication of groundwater contamination on the hydraulically downgradient edge of the disposal area.

(29) Principal activities--Activities authorized by the license that are essential to achieving the purpose(s) for which the license is 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.

(30) Reclamation--Those activities at a uranium recovery licensed facility that work towards achieving the criteria under this subchapter for release of equipment, facilities and/or the site (including land) to unrestricted use or termination of the license.

(31) Reclamation plan--

(A) For the purposes of paragraph (21) of this section and §336.1115 of this title (relating to In situ recovery and Expiration and Termination of

Licenses; Decommissioning of Sites; Separate Buildings or Outdoor Areas, respectively), "reclamation plan" is the plan detailing activities to accomplish reclamation of the licensed site (land surface) where in situ recovery and related activities are licensed to occur. The reclamation plan shall include a schedule for reclamation milestones that are key to the clean-up of the in situ recovery plant location, well fields, and any by-product waste storage location; or

(B) For the purposes of §336.1129(p) - (aa) of this title (relating to Technical Requirements), "reclamation plan" is the plan detailing activities to accomplish reclamation of the by-product material disposal area in accordance with the technical criteria of this section. The reclamation plan shall include a schedule for reclamation milestones that are key to the completion of the final radon barrier, including as appropriate, but not limited to, windblown tailings retrieval and placement on the pile, interim stabilization (including dewatering or the removal of freestanding liquids and recontouring), and final radon barrier construction. Reclamation of by-product material shall also be addressed in the closure plan. The detailed reclamation plan may be incorporated into the closure plan.

(32) Restoration--Those activities that seek to return the groundwater at an underground injection control permitted site to restoration levels established by permit.

(33) Security--This term has the same meaning as financial assurance.

(34) Surface impoundment--A natural topographic depression, man-made excavation, or diked area at a conventional uranium mill, which is designed to receive waste from the milling process which may contain liquid wastes or wastes containing free liquids, solid wastes, mill site demolition materials and debris, and other by-product materials from the milling site.

(35) Unrefined and unprocessed ore--Ore in its natural form before any processing, such as grinding, roasting, beneficiating, or refining. Processing does not include sieving or encapsulation of ore or preparation of samples for laboratory analysis.

(36) Uppermost aquifer--The geologic formation nearest the natural ground surface that is an aquifer, as well as lower aquifers that are hydraulically interconnected with this aquifer within the facility's property boundary.

(37) Uranium recovery--Any uranium extraction or concentration activity that results in the production of "by-product material" as it is defined in this chapter and as it pertains to uranium ore only. As used in this definition, "Uranium recovery" has the same meaning as "uranium milling" in 10 Code of Federal Regulations §40.4.

§336.1113. Specific Terms and Conditions of Licenses.

Unless otherwise specified, each license issued in accordance with this section is subject to the requirements of §305.125 of this title (relating to Standard Permit Conditions) and the following.

(1) Daily inspection of any by-product material retention systems shall be conducted by the licensee. General qualifications for individuals conducting inspections shall be approved by the agency. Records of the inspections shall be maintained for review by the agency.

(2) In addition to the applicable requirements of §336.350 and §336.352 of this title (relating to Reports of Stolen, Lost, or Missing Licensed Radioactive Material and Reports of Exposures, Radiation Levels, and Concentrations of Radioactive Material Exceeding the Limits), the licensee shall immediately notify the agency of the following:

(A) any failure in a by-product material retention system that results in a release of by-product material into unrestricted areas or of any unusual conditions (conditions not contemplated in the design of the retention system) that if not corrected could indicate the potential or lead to failure of the system and result in a release of by-product material into unrestricted areas;

(B) any release of radioactive material that exceeds the concentrations for water listed in Table II, Column 2, of §336.359 of this title (relating to Appendix B. Annual Limits in Intake (ALI) and Derived Air Concentrations (DAC) of

Radionuclides for Occupational Exposure; Effluent Concentrations; Concentrations for Release to Sanitary Sewerage) and that extends beyond the licensed boundary;

(C) any spill that exceeds 20,000 gallons and that exceeds the concentrations for water listed in Table II, Column 2, of §336.359 of this title; or

(D) any release of solids that exceeds the limits in §336.1115(e) of this title (relating to Expiration and Termination of Licenses; Decommissioning of Sites, Separate Buildings or Outdoor Areas) and that extends beyond the licensed boundary.

(3) In addition to the applicable requirements of Chapter 327 of this title (relating to Spill Prevention and Control) and §336.350 and §336.352 of this title, the licensee shall notify the agency within 24 hours of the following:

(A) any spill that extends:

(i) beyond the wellfield monitor well ring;

(ii) more than 400 feet from an injection or production well pipe artery to or from a recovery plant; or

(iii) more than 200 feet from a recovery plant; or

(B) any spill that exceeds 2,000 gallons and that exceeds the concentrations for water listed in Table II, Column 2, of §336.359 of this title.

(4) A written report to the executive director within 30 days after learning of the occurrence of a spill as described in subparagraph (A) or (B) of this paragraph.

The report shall include the following:

(A) location of the spill;

(B) cause of the spill;

(C) corrective steps taken or planned to ensure against a recurrence; and

(D) timely schedule for remediation of the spill or release, if required.

(5) At any time before termination of the license, the licensee shall submit written statements under oath upon request of the commission or executive director to enable the commission to determine whether or not the license should be modified, suspended, or revoked.

(6) The licensee shall be subject to the applicable provisions of Texas Health and Safety Code, Chapter 401, also known as the Texas Radiation Control Act

(TRCA) now or hereafter in effect and to applicable rules and orders of the commission. The terms and conditions of the license are subject to amendment, revision, or modification, by reason of amendments to TRCA or by reason of rules and orders issued in accordance with terms of TRCA.

(7) Any license may be revoked, suspended, or modified, in whole or in part, for any material false statement in the application or any statement of fact required under provisions of TRCA, or because of conditions revealed by any application or statement of fact or any report, record or inspection or other means that would warrant the commission to refuse to grant a license on the original application, or for failure to operate the facility in accordance with the terms of the license, or for any violation of or failure to observe any of the terms and conditions of TRCA or the license or of any rule or order of the commission.

(8) Each person licensed by the commission under this subchapter shall confine possession and use of radioactive materials to the locations and purposes authorized in the license.

(9) No by-product may be disposed of until the executive director has inspected the facility and has found it to be conformance with the description, design, and construction described in the application for a by-product disposal license. No by-product may be received for disposal at the facility until the executive director has approved financial assurance.

(10) The commission may incorporate in any license at the time of issuance, or thereafter, by appropriate rule or order, additional requirements or conditions with respect to the licensee's receipt, possession, or disposal of by-product as it deems appropriate or necessary in order to:

(A) protect the health and safety of the public and the environment; or

(B) require reports and recordkeeping and to provide for inspections of activities under the licenses that may be necessary or appropriate to effectuate the purposes of TRCA and rules thereunder.

§336.1127. Long-term Care and Maintenance Requirements.

(a) Unless otherwise provided by the agency, each licensee licensed in accordance with this part for disposal of by-product material shall make payments into the Environmental Radiation and Perpetual Care Account in amounts specified by the agency. The agency shall make such **determinations on a case-by-case basis.**

(b) **The final disposition of by-product material should be such that the need for ongoing active maintenance is eliminated to the maximum extent practicable.**

(c) **A minimum charge of \$250,000 (1978 dollars) or more, if determined by the agency, must be paid into the Environmental Radiation and Perpetual Care Account to cover the costs of long-term care and maintenance. The total charge must be paid prior**

to the termination of a license. With agency approval, the charge may be paid in installments. The total or unpaid portion of the charge must be covered during the term of the license by additional security meeting the requirements of §336.1125 of this title (relating to Financial Assurance Requirements). If site surveillance, control, or maintenance requirements at a particular site are determined, on the basis of a site-specific evaluation, to be significantly greater (for example, if fencing or monitoring is determined to be necessary), the agency may specify a higher charge. The total charge must be such that, with an assumed 1.0[2.0]% annual real interest rate, the collected funds will yield interest in an amount sufficient to cover the annual costs of site care, surveillance, and where necessary, maintenance. Prior to actual payment, the total charge will be adjusted annually for inflation. The inflation rate to be used is that indicated by the change in the Consumer Price Index published by the United States Department of Labor, Bureau of Labor Statistics.

(d) The requirements of this section apply only to those sites whose ownership is subject to being transferred to the state or the federal government. The total amount of funds collected by the agency in accordance with this section must be transferred to the federal government if title and custody of the by-product material disposal site is transferred to the federal government upon termination of the license.