Legend: (Proposed Amendments)
Single Underline = Proposed new language
[Bold, Print, and Brackets] = Current language proposed for deletion
Regular Print = Current language
(No change.) = No changes are being considered for the designated subdivision

§289.252. Licensing of Radioactive Material.

(a) Purpose. The intent of this section is as follows.

(1) (No change.)

(2) Unless otherwise exempted, no person shall receive, possess, use, transfer, own, or acquire radioactive material except as authorized by the following:

(A) a specific license issued in accordance with this section and/or any of the following sections:

[(i) §289.254 of this title (relating to Licensing of Radioactive Waste Processing and Storage Facilities);]

(i) **[(ii)]** §289.255 of this title (relating to Radiation Safety, Requirements and Licensing and Registration Procedures for Industrial Radiography);

(ii) **[(iii)]** §289.256 of this title (relating to Medical and Veterinary Use of Radioactive Material);

(iii) **[(iv)]** §289.258 of this title (relating to Licensing and Radiation Safety Requirements for Irradiators);

(iv) **[(v)]** §289.259 of this title (relating to Licensing of Naturally Occurring Radioactive Material (NORM)); or

[(vi) §289.260 of this title (relating to Licensing of Uranium Recovery and Byproduct Material Disposal Facilities); or]

(B) (No change.)

(3) (No change.)

(b) Scope. In addition to the requirements of this section, the following additional requirements are applicable.

(1) All licensees, unless otherwise specified, are subject to the requirements in the following sections:

(A) (No change.)

(B) §289.202 of this title (relating to Standards for Protection Against Radiation from Radioactive Materials **[Material]**);

(C) - (F) (No change.)

(2) (No change.)

[(3) Licensees engaged in radioactive waste processing and/or storage are subject to the requirements of §289.254 of this title.]

(3) **[(4)]** Licensees engaged in industrial radiographic operations are subject to the requirements of §289.255 of this title.

(4) **[(5)]** Licensees using radioactive material for medical or veterinary use are subject to the requirements of §289.256 of this title.

(5) **[(6)]** Licensees using sealed sources in irradiators are subject to the requirements of §289.258 of this title.

(6) **[(7)]** Licensees possessing or using naturally occurring radioactive material are subject to the requirements of §289.259 of this title.

[(8) Licensees engaged in uranium recovery and byproduct material disposal are subject to the requirements of §289.260 of this title.]

(c) (No change.)

(d) Filing application for specific licenses. The agency may, at any time after the filing of the original application, require further statements in order to enable the agency to determine whether the application should be denied, abandoned or the license should be issued.

(1) - (10) (No change.)

(11) Action on a specific license application will be considered abandoned if the applicant does not respond within 30 days from the date of a request for any information by the agency. Abandonment of such actions does not provide an opportunity for a hearing; however, the applicant retains the right to resubmit the application in accordance with paragraphs (1) - (7) of this subsection.

(e) General requirements for the issuance of specific licenses. A license application will be approved if the agency determines that:

(1) - (3) (No change.)

(4) the applicant satisfied **[satisfies]** any applicable special requirement in this section and other sections as specified in subsection (a)(2)(A) of this section;

(5) - (6) (No change.)

(7) the applicant submitted **[submits an]** adequate operating, safety, and emergency procedures **[manual]**;

(8) the applicant's permanent facility is located in Texas (if the applicant's permanent facility is not located in Texas, reciprocal recognition shall be sought as required by subsection (ee) of this section); **[and]**

(9) the owner of the property is aware that radioactive material is stored and/or used on the property, if the proposed **[storage]** facility is not owned by the applicant. The applicant shall provide a written statement from the owner, or from the owner's agent, indicating such. This paragraph does not apply to property owned or held by a government entity or to property on which radioactive material is used under an authorization for temporary job site use; **[.]**

(10) there is no reason to deny the license as specified in subsections (d)(10) or (x)(8) **[subsection (d)(10) or (x)(7)]** of this section; and **[.]**

(11) the applicant is listed on the Secretary of State's website as authorized to conduct business in the state, unless the applicant is exempt. All applicants using an assumed name in their application shall file an assumed name certificate with the Secretary of State and/or the office of the county clerk as required under the Business and Commerce Code, Chapter 71.

(f) Radiation safety officer.

(1) - (2) (No change.)

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

(A) - (L) (No change.)

(M) to ensure that personnel are complying with this chapter, the conditions of the license, and the operating, safety, and emergency procedures of the licensee; **[and]**

(N) to serve as the primary contact with the agency; and **[.]**

(O) to have knowledge of and ensure compliance with federal and state security measures for radioactive material.

(4) - (5) (No change.)

(g) The duties and responsibilities of the Radiation Safety Committee (RSC) include but are not limited to the following:

(1) - (8) (No change.)

(9) evaluating new uses of radioactive material; **[and]**

(10) reviewing and approving permitted program and procedural changes prior to implementation; and **[.]**

(11) having knowledge of and ensuring compliance with federal and state security measures for radioactive material.

(h) Specific licenses for broad scope authorization for multiple quantities or types of radioactive material for use in research and development.

(1) - (2) (No change.)

(3) Unless specifically authorized, in accordance with a separate license, persons licensed according to paragraph (1) of this subsection shall not:

(A) receive, acquire, own, possess, use, or transfer devices containing 100,000 curies (Ci) or more of radioactive material in sealed sources used for irradiation of materials;

(B) conduct activities for which a specific license issued by the agency in accordance with subsections (i)-(u) of this section and §289.255, §289.256, and §289.259 **[§§289.254, 289.255, 289.256, and §289.259]** of this title is required;

(C) - (D) (No change.)

(i) Specific licenses for introduction of radioactive material into products in exempt concentrations.

(1) - (4) (No change.)

(5) No person may introduce radioactive material into a product or material knowing or having reason to believe that it will be transferred to persons exempt in accordance with §289.251 of this title (relating to Exemptions, General Licenses, and General License Acknowledgements) except as specified with a license issued by the NRC.

(j) Specific licenses for commercial distribution of radioactive material in exempt quantities.

(1) Authority to transfer possession or control by the manufacturer, processor, or producer of any equipment, device, commodity, or other product containing source material or byproduct material whose subsequent possession, use, transfer, and disposal by all other persons are exempted from regulatory requirements may be obtained only from the United States Nuclear Regulatory Commission (NRC), Washington, DC 20555.

(2) (No change.)

(3) The license issued in accordance with paragraph (2) of this subsection is subject to the following conditions.

(A) - (C) (No change.)

(D) In addition to the labeling information required by subparagraph (C) of this paragraph, the label affixed to the immediate container, or an accompanying brochure, shall:

(i) state that the contents are exempt from the NRC **[United States Nuclear Regulatory Commission (NRC)]**, agreement state, or licensing state requirements;

(ii) - (iii) (No change.)

(4) - (5) (No change.)

(k) - (m) (No change.)

(n) Specific licenses for the manufacture of calibration sources containing americium-241, plutonium, or radium-226 for commercial distribution to persons generally licensed in accordance with §289.251(f)(4)(D) of this title.

(1) In addition to the requirements in subsection (e) of this section, a specific license to manufacture calibration sources containing americium-241, plutonium, or radium-226 to persons generally licensed in accordance with §289.251(f)(4)(D) of this title will be issued if the agency approves the information submitted by the applicant. The information shall satisfy the requirements of Title 10, CFR, §§32.57, 32.58, 32.59, and 32.102, and Title 10, CFR, §70.39 **[10 CFR 70.39]** or their equivalent.

(2) Each person licensed in accordance with this section shall perform a dry wipe test on each source containing more than 0.1 µCi (3.7 kilobecquerels) of americium-241 or radium-226 before transferring the source to a general licensee in accordance with §289.251(f)(4)(D) of this title. This test shall be performed by wiping the entire radioactive surface of the source with a filter paper with the application of moderate pressure. The

radioactivity on the paper shall be measured by using radiation detection instrumentation capable of detecting 0.005 μCi (0.185 kilobecquerel) of americium-241 or radium-226. If removable contamination from any source wipe test exceeds 0.005 μCi (0.185 kilobecquerels) of americium-241 or radium-226, the source is deemed to be leaking and it shall not be transferred to a general licensee.

(o) Specific licenses for the manufacture and commercial distribution of sealed sources or devices containing radioactive material for medical use. In addition to the requirements in subsection (e) of this section, a specific license to manufacture and commercially distribute sealed sources and devices containing radioactive material to persons licensed in accordance with §289.256 of this title for use as a calibration, transmission, or reference source or for use of sealed sources listed in §289.256(rr), (bbb), and (ddd) **[§289.256(bb), §289.256(cc), and §289.256(dd)]** of this title will be issued if the agency approves the following information submitted by the applicant:

(1) - (4) (No change.)

(p) Specific licenses for the manufacture and commercial distribution of radioactive material for certain *in vitro* clinical or laboratory testing in accordance with the general license. In addition to the requirements in subsection (e) of this section, a specific license to manufacture or commercially distribute radioactive material for use in accordance with the general license in §289.251(f)(4)(G) of this title will be issued if the agency approves the following information submitted by the applicant:

(1) documentation that the radioactive material will be prepared for distribution in prepackaged units of:

(A) iodine-125 in units not exceeding 10 microcuries (μCi) (0.37 megabecquerel) each;

(B) iodine-131 in units not exceeding 10 μCi (0.37 megabecquerel) each;

(C) carbon-14 in units not exceeding 10 μCi (0.37 megabecquerel) each;

(D) hydrogen-3 (tritium) in units not exceeding 50 μCi (1.85 megabecquerels) each;

(E) iron-59 in units not exceeding 20 μCi (0.74 megabecquerel) each;

(F) cobalt-57 in units not exceeding 10 μCi (0.37 megabecquerel) each;

(G) selenium-75 in units not exceeding 10 μCi (0.37 megabecquerel) each; or

(H) mock iodine-125 in units not exceeding 0.05 μCi (1.85 kilobecquerels) of iodine-129 and 0.005 μCi (0.185 kilobecquerel) of americium-241 each;

(2) evidence that each prepackaged unit will bear **[bears]** a durable, clearly visible label:

(A) identifying the radioactive contents as to chemical form and radionuclide, and indicating that the amount of radioactivity does not exceed 10 μCi (0.37 megabecquerel) of iodine-125, iodine-131, carbon-14, cobalt-57, or selenium-75; 50 μCi (1.85 megabecquerels) of hydrogen-3 (tritium); 20 μCi (0.74 megabecquerel) of iron-59; or mock iodine-125 in units not exceeding 0.05 μCi (1.85 kilobecquerels) of iodine-129 and 0.005 μCi (0.185 kilobecquerel) of americium-241; and

(B) (No change.)

(3) - (4) (No change.)

(q) (No change.)

(r) Specific licenses for the manufacture, preparation, or transfer for commercial distribution of radioactive drugs containing radioactive materials for medical use.

(1) In addition to the requirements in subsection (e) of this section, a specific license to manufacture, prepare, or transfer for commercial distribution, radioactive drugs containing radioactive material for use by persons authorized in accordance with §289.256 of this title will be issued if the agency approves the following information submitted by the applicant:

(A) evidence that the applicant is at least one of the following:

(i) registered **[or licensed]** with the United States Food and Drug Administration (FDA) as the owner or operator of a drug establishment that engages in the manufacture, preparation, propagation, compounding, or processing of a drug in accordance with Title 21, CFR, §207.20(a) **[manufacturer]**;

(ii) registered or licensed with a state agency as a drug manufacturer; **[or]**

(iii) (No change.)

(iv) operating as a nuclear pharmacy within a federal medical institution; or

(v) a positron emission tomography (PET) drug production facility registered with a state agency.

(B) – (C) (No change.)

(2) A licensee shall possess and use instrumentation to measure the radioactivity of radioactive drugs and shall have procedures for the use of the instrumentation. The licensee shall measure, by direct measurement or by a combination of measurements and calculations, the amount of radioactivity in dosages of alpha, beta, or photon-emitting radioactive drugs prior to transfer for commercial distribution. In addition, the licensee shall:

(A) - (C) (No change.)

(3) A licensee described in paragraph (1)(A)(iii) or (iv) of this subsection shall prepare radioactive drugs for medical use as defined **[described]** in §289.256 of this title with the following provisions. **[:]**

(A) Radioactive drugs shall be prepared by either an authorized nuclear pharmacist, as specified in subparagraphs (B) and (C) of this paragraph, or an individual under the supervision of an authorized nuclear pharmacist as specified in §289.256(s) of this title.

[(A) radioactive drugs shall be prepared by a nuclear pharmacist(s) designated in the application as the individual user(s) who has completed the training and experience requirements specified in §289.256 of this title;]

(B) A pharmacist shall be allowed to work as an authorized nuclear pharmacist if:

(i) the individual qualifies as an authorized nuclear pharmacist as defined in §289.256 of this title;

(ii) the individual meets the requirements specified in §289.256(k)(2) and (m) of this title, and the licensee has received from the agency, an approved license amendment identifying this individual as an authorized nuclear pharmacist; or

(iii) the individual is designated as an authorized nuclear pharmacist in accordance with subparagraph (C) of this paragraph.

(C) May designate a pharmacist, as defined in §289.256 of this title, as an authorized nuclear pharmacist if:

(i) the individual was a nuclear pharmacist preparing only radioactive drugs containing accelerator-produced radioactive material; and

(ii) the individual practiced at a pharmacy at a government agency or federally recognized Indian Tribe or at all other pharmacies prior to the effective date of this rule as noticed by the NRC or the agency.

(D) Provide the following to the agency:

(i) a copy of each individual's certification by a specialty board whose certification process has been recognized by the NRC, agency, or an agreement state as specified in §289.256(k)(1) of this title with the written attestation signed by a preceptor as required by §289.256(k)(2)(C) of this title ; or

(ii) the agency, NRC, or another agreement state license, or

(iii) the permit issued by a broad scope licensee or the authorization from a commercial nuclear pharmacy authorized to list its own authorized nuclear pharmacist; or

(iv) documentation that only accelerator-produced radioactive materials were used in the practice of nuclear pharmacy at a government agency or federally recognized Indian Tribe or at all other locations of use prior to the effective date of this rule as noticed by the NRC or the agency; and

(v) a copy of the Texas State Board of Pharmacy licensure or registration, no later than 30 days after the date that the licensee allows, in accordance with subparagraph (B)(i) and (iii) of this paragraph, the individual to work as an authorized nuclear pharmacist.

(E) **[(B)]** The **[the]** radiopharmaceuticals for human use shall be processed and prepared according to instructions that are furnished by the manufacturer on the label attached to or in the FDA-accepted instructions in the leaflet or brochure that accompanies the generator or reagent kit. **[;]**

(F) **[(C)]** If **[if]** the authorized nuclear pharmacist elutes generators or processes radioactive material with the reagent kit in a manner that deviates from instructions furnished by the manufacturer on the label attached to or in the leaflet or brochure that accompanies the generator or reagent kit or in the accompanying leaflet or brochure, a complete description of the deviation shall be made and maintained for inspection by the agency for a period of three years. **[; and]**

[(D) provide to the agency a copy of each individual's certification by the Texas State Board of Pharmacy or the permit issued by a licensee of broad scope, and a copy of the state pharmacy license. If the licensee adds a nuclear pharmacist(s) to the license, this shall be completed no later than 30 days after the date that the licensee allows the individual(s) to work as a nuclear pharmacist.]

(4) Nothing in this subsection relieves the licensee from complying with applicable FDA, or other federal**[,]** and state requirements governing radioactive drugs.

(s) - (w) (No change.)

(x) Specific terms and conditions of licenses.

(1) – (2) (No change.)

(3) Each person licensed by the agency in accordance with this section shall confine use and possession of the radioactive material licensed to the locations and purposes authorized in the license. Radioactive material shall not be used or stored in residential locations unless specifically authorized by the agency.

(4) (No change.)

(5) Each licensee shall notify the agency's Radiation Safety Licensing Branch **[agency]**, in writing, immediately following the filing of a voluntary or involuntary petition for bankruptcy by the licensee or its parent company, if the parent company is involved in the bankruptcy.

(6) The notification in paragraph (5) **[(4)]** of this subsection shall include:

(A) - (B) (No change.)

(7) - (8) (No change.)

(9) Each licensee preparing technetium-99m radiopharmaceuticals from molybdenum-99/technetium-99m generators or rubidium-82 from strontium-82/rubidium-82 generators shall test the generator eluates for molybdenum-99 breakthrough or strontium-82 and strontium-85 contamination, respectively, in accordance with §289.256 of this title. The licensee shall record the results of each test and retain each record for 3 years after the record is made for inspection by the agency.

(y) Expiration and termination of licenses and decommissioning of sites and separate buildings or outdoor areas.

(1) Except as provided in paragraph (2) of this subsection and subsection (z)(2) of this section, each specific license expires at the end of the day, in the month and year stated in the license. **[Expiration of the specific license does not relieve the licensee of the requirements of this chapter.]**

(2) - (17) (No change.)

(z) - (dd) (No change.)

(ee) Reciprocal recognition of licenses.

(1) Subject to this section, any person who holds a specific license from NRC, any agreement state, or any licensing state, and issued by the agency having jurisdiction where the licensee maintains an office for directing the licensed activity and at which radiation safety records are normally maintained, is granted a general license to conduct the activities authorized in such licensing document within the State of Texas provided that:

(A) - (C) (No change.)

(D) the out-of-state licensee supplies such other information as the agency may request; **[and]**

(E) the out-of-state licensee shall not transfer or dispose of radioactive material possessed or used in accordance with the general license provided in this subsection except by transfer to a person:

(i) (No change.)

(ii) exempt from the requirements for a license for such material in accordance with §289.251(e)(1) of this title; and **[.]**

(F) The out-of-state licensee shall have the following documents in their possession at all times when conducting work in Texas, and make them available for agency review upon request:

(i) a copy of the agency letter granting the licensee reciprocal recognition of their out-of-state license;

(ii) a copy of the licensee's operating and emergency procedures;

(iii) a copy of the licensee's radioactive material license;

(iv) a copy of all applicable sections of 25 TAC, Chapter 289; and

(v) a copy of the completed BRC Form 252-3 notifying the agency of the licensee's intent to work in Texas.

(2) - (3) (No change.)

(ff) - (hh) (No change.)

(ii) Increased controls (ICs). Licensees possessing sources containing radioactive material, at any given time, in quantities greater than or equal to the quantities of concern listed in subsection (jj)(9) of this section shall:

(1) (No change.)

(2) limit access to such radioactive material and devices to only approved individuals who require access to perform their duties.

(A) The licensee shall allow only trustworthy and reliable individuals, approved in writing by the licensee, to have unescorted access to radioactive material quantities of concern (RAM QC) and devices.

(B) - (C) (No change.)

(D) Service providers shall be escorted unless determined to be trustworthy and reliable by an NRC **[U.S. Nuclear Regulatory Commission (NRC)]** required background investigation as an employee of a manufacturing and distribution (M&D) licensee. Written verification attesting to or certifying the person's trustworthiness and reliability shall be obtained from the M&D **[manufacturing and distribution]** licensee providing the service.

(E) The licensee shall document the basis for concluding that there is reasonable assurance that an individual granted unescorted access is trustworthy and reliable, and does not constitute an unreasonable risk for unauthorized use of RAM QC **[radioactive material quantities of concern]**. The licensee shall maintain a list of persons approved for unescorted access to such radioactive material and devices by the licensee.

(3) Each licensee shall have a documented program to monitor and immediately detect, assess, and respond to unauthorized access to RAM QC **[radioactive material quantities of concern]** and devices in use or in storage. Enhanced monitoring shall be provided during periods of source delivery or shipment, where the delivery or shipment exceeds 100 times the values listed in subsection (jj)(9) of this section.

(A) - (E) (No change.)

(4) (No change.)

(5) For domestic highway and rail shipments, prior to shipping licensed radioactive material that exceeds 100 times the quantities in subsection (jj)(9) of this section per consignment, the licensee shall:

(A) Notify the NRC Director, Office of Nuclear Material Safety and Safeguards U.S. Nuclear Regulatory Commission, Washington, DC 20555, in writing, at least 90 days prior to the anticipated date of shipment. The NRC will issue the Order to implement the Additional Security Measures (ASMs) for the transportation of RAM QC **[Radioactive Material Quantities of Concern (RAM QC)]**. The licensee shall not ship this material until the ASMs for the transportation of RAM QC are implemented or the licensee is notified otherwise, in writing, by the NRC.

(B) (No change.)

(6) - (8) (No change.)

(9) The licensee shall retain documentation required by these ICs **[increased controls]** for inspection by the agency for three years after they are no longer effective.

(A) - (D) (No change.)

(E) After the license is terminated or amended to reduce possession limits below the quantities of concern, the licensee shall retain all documentation required by these ICs **[increased controls]** for three years.

(10) Detailed information generated by the licensee that describes the physical protection of RAM QC **[radioactive material quantities of concern]**, is sensitive information and shall be protected from unauthorized disclosure.

(A) - (B) (No change.)

(jj) Appendices.

(1) (No change.)

(2) Isotope quantities (for use in subsection (gg) of this section).

Figure: 25 TAC §289.252(jj)(2) **[Figure: 25 TAC §289.252(jj)(2)]**

(3) - (8) (No change.)

(9) Radionuclide quantities of concern. The following methods shall be used to determine which sources of radioactive material require ICs **[increased controls (ICs)]**:

(A) - (C) (No change.)

(D) quantities of radioactive materials used to determine quantities of concern. The following table contains quantities of radioactive materials to be used in determining a quantity of concern.

Figure: 25 TAC §289.252(jj)(9)(D) **[Figure: 25 TAC §289.252(jj)(9)(D)]**

(kk) Requirements for the issuance of specific licenses for a medical facility or educational institution to produce Positron Emission Tomography (PET) radioactive drugs for noncommercial transfer to licensees in its consortium.

(1) A license application will be approved if the agency determines that an application from a medical facility or educational institution to produce PET radioactive drugs

for noncommercial transfer to licensees in its consortium authorized for medical use in accordance with §289.256 of this title includes:

(A) a request for authorization for the production of PET radionuclides or evidence of an existing license issued in accordance with this section, the NRC, or another agreement states requirements for a PET radionuclide production facility within its consortium from which it receives PET radionuclides;

(B) evidence that the applicant is qualified to produce radioactive drugs for medical use by meeting one of the criteria in subsection (r)(1)(A) of this section;

(C) identification of individual(s) authorized to prepare the PET radioactive drugs if the applicant is a pharmacy, and documentation that each individual meets the requirements of an authorized nuclear pharmacist as specified in subsection (r)(3)(B) of this section; and

(D) information identified in subsection (r)(1)(B) of this section on the PET drugs to be noncommercially transferred to members of its consortium.

(2) Authorization in accordance with paragraph (1) of this subsection to produce PET radioactive drugs for noncommercial transfer to medical use licensees in its consortium does not relieve the licensee from complying with applicable FDA, other federal, and state requirements governing radioactive drugs.

(3) Each licensee authorized in accordance with paragraph (1) of this subsection to produce PET radioactive drugs for noncommercial transfer to medical use licensees in its consortium shall:

(A) satisfy the labeling requirements in subsection (r)(1)(C) of this subsection for each PET radioactive drug transport radiation shield and each syringe, vial, or other container used to hold a PET radioactive drug intended for noncommercial distribution to members of its consortium; and

(B) possess and use instrumentation meeting the requirements of §289.202(p)(2)(D) of this title to measure the radioactivity of the PET radioactive drugs intended for noncommercial distribution to members of its consortium and meet the procedural, radioactivity measurement, instrument test, instrument check, and instrument adjustment requirements in subsection (r)(2) of this section.

(4) A licensee that is a pharmacy authorized in accordance with paragraph (1) of this subsection to produce PET radioactive drugs for noncommercial transfer to medical use licensees in its consortium shall require that any individual that prepares PET radioactive drugs shall be:

(A) an authorized nuclear pharmacist that meets the requirements in subsection (r)(3)(B) of this section; or

(B) an individual under the supervision of an authorized nuclear pharmacist as specified in §289.256(s) of this title.

(5) A pharmacy, authorized in accordance with paragraph (1) of this subsection to produce PET radioactive drugs for noncommercial transfer to medical use licensees in its consortium that allows an individual to work as an authorized nuclear pharmacist, shall meet the requirements of subsection (r)(3)(D) of this section.

Figure: 25 TAC §289.252(jj)(2)

RADIONUCLIDES	Limit	Unsealed Sources			Sealed Sources
		10^3	10^4	10^5	10^{10}
Pr-141 Gd-152 Bi-209m U-232 Pu-240 Cm-245 Cf-252 Ce-142 Dy-154 Po-208 U-233 Pu-241 Cm-246 Es-254 Nd-144 Dy-156 Po-209 U-234 Pu-242 Cm-247 Nd-145 Tb-159 Po-210 U-235 Pu-244 Cm-248 Sm-146 Ho-165 Ra-226 U-236 Am-241 Bk-247 Sm-147 Hf-174 Ac-227 Np-235 Am-242m Bk-249 Sm-148 W-180 Th-228 Np-237 Am-243 Cf-248 Gd-148 Pt-190 Th-229 Pu-236 Cm-242 Cf-249 Gd-150 Pb-210 Th-230 Pu-238 Cm-243 Cf-250 Gd-151 Bi-209 Pa-231 Pu-239 Cm-244 Cf-251 and any alpha-emitting radionuclide not listed above or mixtures of unknown alpha emitters of unknown composition.	0.01 µCi	0.01 mCi	0.1 mCi	1.0 mCi	100 Ci
Be-10 Fe-60 Rh-102 Te-123 Sm-145 Lu-175 Ir-199m Al-26 Zn-70 Pd-107 Te-130 Nd-150 Lu-176 Pt-192 Si-32 Ge-68 Ag-108m I-129 Eu-150 Lu-177m Pt-198 Ar-39 Ge-76 Cd-113m La-137 Tb-157 Hf-172 Hg-194 K-40 Kr-81 Cd-116 La-138 Tb-158 Hf-182 Pb-202 Ar-42 Sr-90 Sn-121m Ce-139 Dy-159 Ta-179 Pb-205 Ca-48 Zr-96 Sn-123 Pm-143 Ho-166m Re-184m Bi-208 Ti-44 Mo-100 Sn-124 Pm-144 Lu-173 Re-187 Ra-228 V-49 Tc-98 Sn-126 Pm-145 Lu-174 Re-189 Np-236 V-50 Rh-101 Te-121m Pm-146 Lu-174m Os-194 Bk-248 and any other alpha-emitting radionuclides not listed above or mixtures of beta emitters of unknown composition.	0.1 µCi	0.1 mCi	1.0 mCi	10 mCi	1.0 kCi
Na-22 Ru-106 Cs-134 Eu-152 Bi-210 Co-60 Ag-110m Ce-144 Eu-154	1.0 µCi	1.0 mCi	10 mCi	100 mCi	10 kCi
Cl-36 Ni-63 Rb-87 Cd-109 Ba-133 Gd-153 Tm-171 Ca-45 Zn-65 Zr-93 In-115 Ba-135 Eu-155 W-181 Mn-54 Se-75 Nb-93m Sb-125 Cs-137 Tm-170 Tl-204	10 µCi	10 mCi	100 mCi	1.0 Ci	100 kCi
C-14, Co-57 Kr-85 Tc-99 Ir-194 U (natural) U-238 Fe-55 Ni-59 Tc-97 Pt-193, Th-232 Th (natural)	100 µCi	100 mCi	1.0 Ci	10 Ci	1.0MCi
H-3	1.0 mCi	1 Ci	10 Ci	100 Ci	10 MCi

Figure: 25 TAC §289.252(jj)(9)(D)

Radionuclide	Quantity of Concern[1] (TBq)	Quantity of Concern[2] (Ci)
Am-241	0.6	16
Am-241/Be	0.6	16
Cf-252	0.2	5.4
Cm-244	0.5	14
Co-60	0.3	8.1
Cs-137	1	27
Gd-153	10	270
Ir-192	0.8	22
Pm-147	400	11,000
Pu-238	0.6	16
Pu-239/Be	0.6	16
Ra-226	0.4	11
Se-75	2	54
Sr-90 (Y-90)	10	270
Tm-170	200	5,400
Yb-169	3	81
Combinations of radioactive materials listed above[3]	See footnote below[4]	

[1] The aggregate activity of multiple, collocated sources of the same radionuclide should be included when the total activity equals or exceeds the quantity of concern.

[2] The primary values used for compliance are TBq. The curie (Ci) values are rounded to 2 significant figures for informational purposes only.

[3] Radioactive materials are to be considered aggregated or collocated if breaching a common physical security barrier (e.g., a locked door at the entrance to a storage room) would allow access to the radioactive material or devices containing the radioactive material. When transporting or storing sources on vehicles and/or trailers, the sources are automatically considered co-located.

[4] If several radionuclides are aggregated, the sum of the ratios of the activity of each source, *i* of radionuclide, *n*, A(*i,n*), to the quantity of concern for radionuclide *n*, Q(*n*), listed for that radionuclide equals or exceeds 1. [(aggregated source activity for radionuclide A) ÷ (quantity of concern for radionuclide A)] + [(aggregated source activity for radionuclide B) ÷ (quantity of concern for radionuclide B)] + etc..... >1