

**SECOND REVISED PROPOSED REGULATION OF THE  
STATE BOARD OF HEALTH**

**LCB File No. R185-08**

January 7, 2010

EXPLANATION – Matter in *italics* is new; matter in brackets ~~[omitted material]~~ is material to be omitted.

AUTHORITY: §§1-29, 31-51, 53-56, 58, 61-74, 76, 79, 81-86 and 88, NRS 459.201; §§30 and 75, NRS 439.150 and 459.201; §§ 52, 57, 59, 60, 77 and 78, NRS 459.030 and 459.201; §§ 80 and 87, NRS 459.070 and 459.201.

A REGULATION relating to radioactive material; regulating the possession or transfer of radium-226 and americium-241; adopting by reference certain federal regulations; requiring the registration of any new X-ray system, including fees to be paid; regulating the operation, maintenance and use of therapeutic X-ray systems to include electronic brachytherapy systems; setting forth the training requirements and duties of authorized users, authorized medical physicists for electronic brachytherapy and certain radiation safety officers; requiring a registrant who uses a therapeutic X-ray system to provide annual safety training for that system; setting forth proper operating procedures, including various safety and calibration checks, for facilities with therapeutic X-ray systems; requiring a registrant to establish and maintain a quality management program and a quality assurance program; setting forth the requirements which must be followed by operators of portable equipment which is hand-held; revising certain exemptions in the handling of by-product material for certain licensees; revising certain provisions to include exempt quantities of radioactive materials; setting forth certain procedures for the production of radioactive drugs, including reporting to the Health Division of the Department of Health and Human Services; requiring certain annual reports regarding exposure to radioactive material; repealing certain provisions relating to medical uses of radiation; and providing other matters properly relating thereto.

**Section 1.** Chapter 459 of NAC is hereby amended by adding thereto the provisions set forth as sections 2 to 45, inclusive, of this regulation.

**Sec. 2.** *“Accelerator-produced radioactive material” means, except as otherwise provided in NAC 459.0525, any material made radioactive by a particle accelerator.*

**Sec. 3.** *“Air-purifying respirator” means a respirator with an air-purifying filter, cartridge or canister that removes specific air contaminants by passing ambient air through the air-purifying element.*

**Sec. 4.** *“Authorized medical physicist for electronic brachytherapy” means a person who has met the requirements of section 32 of this regulation.*

**Sec. 5.** *“Consortium” means an association of medical use licensees and a production facility for positron emission tomography radionuclides, located at an educational institution or medical facility, which:*

- 1. Are in the same geographical area; and*
- 2. Jointly own or share in the operation and maintenance costs of the production facility which produces positron emission tomography radionuclides for use in producing radioactive drugs within the consortium for noncommercial distribution among the associated members of the consortium for medical use.*

**Sec. 6.** *“Discrete source” means a radionuclide that is processed so that its concentration within a material is purposely increased for use in commercial, medical or research activities.*

**Sec. 7.** *“Disposable respirator” means a respirator for which maintenance is not intended and which is designed to be discarded after excessive breathing resistance, sorbent exhaustion, physical damage or its end-of-service-life renders it unsuitable for use.*

**Sec. 8.** *“Electronic brachytherapy” means a method of radiation therapy that uses X-rays which are electronically generated to deliver a radiation dose at a distance of up to a few*

*centimeters by intracavitary, intraluminal or interstitial application or by an application with the source in contact with, or very close to, the body surface.*

**Sec. 9.** *“Electronic brachytherapy source” means the X-ray tube component used in an electronic brachytherapy system.*

**Sec. 10.** *“Electronic brachytherapy system” means the system used to produce and deliver therapeutic radiation, including, without limitation, the electronic brachytherapy source, the control mechanism, the cooling system and the power source.*

**Sec. 11.** *“Filtering facepiece” or “dust mask” means 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, which is not equipped with elastomeric sealing surfaces and adjustable straps.*

**Sec. 12.** *“Helmet” means a rigid respiratory inlet covering that also provides head protection against impact and penetration.*

**Sec. 13.** *“Hood” means a respiratory inlet covering that completely covers the head and neck and may also cover portions of the shoulders and torso.*

**Sec. 14.** *“Loose-fitting facepiece” means a respiratory inlet covering that is designed to form a partial seal with the face.*

**Sec. 15.** *“Medical event” means any event, other than an event that is the result of patient intervention, in which the administration of radiation results in:*

- 1. A dose that differs from the prescribed dose;*
- 2. The total dose delivered differing from the prescribed dose by 20 percent or more;*

3. *The fractionated dose delivered differing from the prescribed dose for a single fraction by 50 percent or more; or*

4. *An administration of a dose to the wrong person or at the wrong treatment site.*

**Sec. 16.** *“Mobile electronic brachytherapy” means an electronic brachytherapy system which is transported from the address of record to be used at another address which is not the address of record.*

**Sec. 17.** *“Portable shielding” means shielding which may be moved easily by a mobility device or by hand and placed in a primary or secondary beam to reduce the radiation exposure of a person.*

**Sec. 18.** *“Specific training on the system provided by the manufacturer” means training in the operation of the system, safety procedures and clinical use of the system for the uses approved by the United States Food and Drug Administration, and may be fulfilled:*

1. *By satisfactory completion of a training program provided by the manufacturer or an approved institution contracted by the manufacturer; or*

2. *By receiving training from an authorized user or authorized medical physicist for electronic brachytherapy who is authorized by the Division to use the system.*

**Sec. 19.** *“Waste” means any low-level radioactive waste containing source material, special nuclear material or by-product material specified in NAC 459.022 that is acceptable for disposal in a land disposal facility. The term does not include any high-level radioactive waste, transuranic waste, spent nuclear fuel or by-product material specified in subsections 3 and 4 of NAC 459.022.*

**Sec. 20.** *A licensee may dispose of by-product material specified in subsections 3 and 4 of NAC 459.022:*

*1. At a facility licensed pursuant to 10 C.F.R. Part 61 or equivalent regulations of an agreement state, even though it is not defined as low-level radioactive waste, if it meets the requirements of NAC 459.313; or*

*2. At any disposal facility authorized to dispose of such material in accordance with any federal or state solid or hazardous waste law, including the Solid Waste Disposal Act, as authorized pursuant to the Energy Policy Act of 2005, Public Law 109-058.*

**Sec. 21.** *1. A general license is hereby issued to acquire, receive, possess, use or transfer radium-226 which is contained in the following products, if those products were manufactured before 60 days after the effective date of this regulation:*

*(a) Antiquities which were originally intended for use by the general public and distributed in the late 19th and early 20th centuries, including, without limitation, radium emanator jars, revigators, radium water jars, radon generators, refrigerator cards, radium bath salts and healing pads;*

*(b) Intact timepieces containing greater than 1 microcurie (0.037 megabecquerel) of radium-226, nonintact timepieces and timepiece hands and dials which are no longer installed in timepieces;*

*(c) Luminous items installed in air, marine or land vehicles;*

*(d) All other luminous products, if not more than 100 items are used or stored at the same location at any one time; and*

*(e) Radium sources which contain not more than 1 microcurie (0.037 megabecquerel) of radium-226, including, without limitation, discrete survey instrument check sources, sources contained in radiation measuring instruments, sources used in educational demonstrations such as cloud chambers and spinthariscopes, electron tubes, lightning rods, ionization sources, static eliminators or items otherwise designated by the Division.*

*2. A person who acquires, receives, possesses, uses or transfers radium-226 contained in any product listed in subsection 1 in accordance with a general license issued pursuant to that subsection is exempt from the provisions of NAC 459.124, 459.320 to 459.374, inclusive, and 459.780 to 459.794, inclusive, and 10 C.F.R. Part 21.*

*3. A person who acquires, receives, possesses, uses or transfers a product containing radium-226 in accordance with a general license issued pursuant to subsection 1 shall:*

*(a) Notify the Division within 30 days, in writing, if there is any indication of possible damage to the product which may result in a loss of the radioactive material, including a brief description of the event in which the damage occurred and any remedial action taken;*

*(b) Not abandon any product containing radium-226, but ensure that the product and any radioactive material from the product are disposed of pursuant to section 20 of this regulation or by transfer to a person authorized by a specific license to receive the radium-226 in the product or as otherwise approved by the Division;*

*(c) Not export the product containing radium-226;*

*(d) Dispose of the product containing radium-226 at a disposal facility authorized to dispose of radioactive material in accordance with any federal or state hazardous waste law, including, without limitation, the Solid Waste Disposal Act, as authorized under the Energy*

*Policy Act of 2005, Public Law 109-058, by a transfer to a person authorized to receive radium-226 by a specific license issued pursuant to NAC 459.180 to NAC 459.313, inclusive, or an equivalent regulation of an agreement state, or as approved by the Division; and*

*(e) Respond to a written request from the Division to provide information relating to the acquisition, receipt, possession, use or transfer of radium-226 contained in any product listed in subsection 1 within 30 days after the request, unless another period is specified in the request. If the person is unable to provide the requested information within the required period, he or she may request an extension of time from the Division in writing at the address specified in NAC 459.134.*

*4. Except for the disassembly and repair of timepieces, a general license issued pursuant to subsection 1 does not authorize a person to manufacture, assemble, disassemble, repair or import products which contain radium-226.*

*Sec. 22. An application for a specific license to manufacture or initially transfer calibration or reference sources which contain americium-241 or radium-226 for distribution to a person who holds a general license issued pursuant to NAC 459.224 will be approved:*

*1. If the applicant satisfies the general requirements of NAC 459.238;*

*2. If the applicant submits sufficient information regarding each type of calibration or reference source relating to the evaluation of the potential radiation exposure, including, without limitation:*

*(a) The chemical and physical form of the source and maximum quantity of americium-241 or radium-226 in the source;*

*(b) The details of construction and design of the source;*

*(c) The details of the method of incorporation and binding of the americium-241 or radium-226 in the source;*

*(d) The procedure for and results of a prototype testing of a source designed to contain more than 0.005 microcurie (185 becquerels) of americium-241 or radium-226 in order to demonstrate that the americium-241 or radium-226 contained in each source will not be released or removed from the source under normal conditions of use;*

*(e) The details of quality control procedures which will be followed in the manufacture of the source;*

*(f) A description of the labeling to be affixed to the source or the storage container for the source; and*

*(g) Any additional information, including experimental studies and tests, required by the Division to facilitate a determination of the safety of the source;*

*3. If each source contains not more than 5 microcuries (185 kilobecquerels) of americium-241 or radium-226; and*

*4. If the Division determines, for any source which contains more than 0.005 microcurie (185 becquerels) of americium-241 or radium-226 that:*

*(a) The method of incorporation and binding of the americium-241 or radium-226 in the source is such that the americium-241 or radium-226 will not be released or removed from the source under normal conditions of use and handling of the source; and*

*(b) The source has been subjected to, and has passed in a satisfactory manner, the prototype tests prescribed by 10 C.F.R. § 32.102, Schedule C, as it existed on November 30, 2007, or an equivalent regulation of an agreement state.*



**Sec. 23.** *1. Before transferring a source containing more than 0.1 microcurie of americium-241 or radium-226 to a person who holds a general license issued pursuant to NAC 459.224, a person who holds a specific license issued pursuant to section 22 of this regulation shall perform a dry wipe test on the source. The test must be performed by wiping with moderate pressure the entire radioactive surface of the source with a filter paper.*

*2. The radioactivity of the filter paper after the dry wipe test must be measured by a radiation detection instrument which is capable of detecting 0.005 microcurie (185 becquerels) of americium-241 or radium-226.*

*3. If the test discloses more than 0.005 microcurie (185 becquerels) of radioactive material, the source shall be deemed to be leaking americium-241 or radium-226 and must not be transferred to a general licensee pursuant to NAC 459.224, 10 C.F.R. § 31.8 or an equivalent regulation of an agreement state.*

**Sec. 24.** *A person who holds a general license issued pursuant to section 21 of this regulation shall affix a label to each source or storage container for the source, which contains sufficient information to ensure the safe use and storage of the source and shall include in the label the information contained in NAC 459.224, or a substantially similar statement. Sources licensed under 10 C.F.R. § 32.57 or an equivalent state regulation before January 19, 1978, may bear labels authorized by the regulations in effect on January 1, 1978.*

**Sec. 25.** *The provisions of 10 C.F.R. §§ 71.0(c), 71.1(a), 71.3, 71.4, 71.15, 71.17, 71.19(a), 71.19(b), 71.19(c), 71.20 to 71.23, inclusive, 71.47, 71.83 to 71.89, inclusive, 71.97, 71.101(a), 71.101(b), 71.101(c), 71.101(g), 71.105, 71.127 to 71.137, inclusive, and Appendix A*

*to Part 71, as those provisions existed on November 14, 2007, are hereby adopted by reference, subject to the following:*

*1. The exclusion of the following definitions from 10 C.F.R. § 71.4:*

- (a) “Close reflection by water”;*
- (b) “Licensed material”;*
- (c) “Optimum interspersed hydrogenous moderation”;*
- (d) “Spent nuclear fuel or spent fuel”; and*
- (e) “State.”*

*2. The substitution of the following rule references:*

- (a) “NAC 459.737” for “§ 34.31(b) of this chapter” as found in 10 C.F.R. § 71.101(g);*
- (b) “Subsection 1 of NAC 459.339” for “10 C.F.R § 20.1502”;*
- (c) “NAC 459.3062” for “10 C.F.R. Part 35”;*
- (d) “Subsection 5 of NAC 459.3585” for “10 C.F.R. § 20.1906(e)”;*
- (e) “Section 26 of this regulation” for “10 C.F.R. § 71.5”;*
- (f) “10 C.F.R. §§ 71.101(a), 71.101(b), 71.101(c)(1), 71.101(g), 71.105 and 71.127 to 71.137, inclusive,” for “subpart H of this part” or “subpart H” except in 10 C.F.R. §§ 71.17(b), 71.20(b), 71.21(b), 71.22(b) and 71.23(b);*
- (g) “10 C.F.R. §§ 71.0(c), 71.1(a), 71.3, 71.4, 71.17(c)(2), 71.20(c)(2), 71.21(d)(2), 71.83 to 71.89, inclusive, 71.97, 71.101(b), 71.101(c), 71.101(g), 71.105 and 71.127 to 71.137, inclusive,” for “subparts A, G and H of this part”;*
- (h) “10 C.F.R. § 71.47” for “subparts E and F of this part”; and*

(i) *“10 C.F.R. §§ 71.101(a), 71.101(b), 71.101(c)(1), 71.101(g), 71.105 and 71.127 to 71.137, inclusive,” for “§§ 71.101 through 71.137.”*

*3. The substitution of the following terms:*

*(a) “Division” for:*

*(1) “Commission” in 10 C.F.R. §§ 71.0(c), 71.17(a), 71.20(a), 71.21(a), 71.22(a), 71.23(a) and 71.101(c)(1);*

*(2) “Director, Division of Nuclear Security, Office of Nuclear Security and Incident Response” in 10 C.F.R. §§ 71.97(c)(1) and 71.97(f)(1);*

*(3) “Director, Office of State Programs, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555-0001” in 10 C.F.R. § 71.97(c)(3)(iii); and*

*(4) “NRC” in 10 C.F.R. § 71.101(f);*

*(b) “The Nuclear Regulatory Commission or an agreement state” for “Commission” in 10 C.F.R. § 71.3;*

*(c) “The Governor of Nevada” for:*

*(1) “The governor of a State” in 10 C.F.R. § 71.97(a);*

*(2) “Each appropriate governor” in 10 C.F.R. § 71.97(c)(1);*

*(3) “The governor” in 10 C.F.R. § 71.97(c)(3);*

*(4) “The governor of the State” in 10 C.F.R. § 71.97(e);*

*(5) “The governor of each State” in 10 C.F.R. § 71.97(f)(1); and*

*(6) “A governor” in 10 C.F.R. § 71.97(e);*

*(d) “State of Nevada” for “State” in 10 C.F.R. §§ 71.97(a), 71.97(b)(2) and 71.97(d)(4);*

*(e) “The Governor of Nevada’s” for:*

- (1) *“The governor’s” in 10 C.F.R. §§ 71.97(a), 71.97(c)(3), 71.97(e) and 71.97(f)(1);*
- (2) *“Governor’s” in 10 C.F.R. §§ 71.97(c)(1) and 71.97(e); and*
- (3) *“Governors” in 10 C.F.R. § 71.97(c)(3)(iii);*
- (f) *“Specific or general” for “NRC” in 10 C.F.R. § 71.0(c);*
- (g) *“The Division” for “ATTN: Document Control Desk, Director, Spent Fuel Project Office, Office of Nuclear Material Safety and Safeguards” in 10 C.F.R. § 71.101(c)(1);*
- (h) *“Each” for “Using an appropriate method listed in § 71.1(a), each” in 10 C.F.R. § 71.101(c)(1);*
- (i) *“The material must be contained in a Type A package meeting the requirements of 49 C.F.R. § 173.417(a)” for “The fissile material need not be contained in a package which meets the standards of subparts E and F of this part; however, the material must be contained in a Type A package. The Type A package must also meet the DOT requirements of 49 C.F.R. 173.417(a)” as found in 10 C.F.R. §§ 71.22(a) and 71.23(a);*
- (j) *“Licensee” for “licensee, certificate holder, and applicant for a CoC”; and*
- (k) *“Licensee is” for “licensee, certificate holder, and applicant for a CoC are.”*

**Sec. 26. 1.** *Each licensee who transports licensed material outside the site of usage, as specified in the license issued by the Executive Secretary, the United States Nuclear Regulatory Commission or an agreement state, or where transport is on public highways, or who delivers licensed material to a carrier for transport, shall comply with the applicable requirements of the regulations of the United States Department of Transportation set forth in 49 C.F.R. Parts 107, 171 to 180, inclusive, and 390 to 397, inclusive, appropriate to the mode of transport.*

*2. The licensee shall particularly note those regulations specified in the following areas:*

- (a) Accident reporting--49 C.F.R. §§ 171.15 and 171.16.*
- (b) Hazardous material employee training--49 C.F.R. §§ 172.700 to 172.704, inclusive.*
- (c) Hazardous material shipper or carrier registration--49 C.F.R. §§ 107.601 to 107.606, inclusive (Subpart G).*
- (d) Marking and labeling--49 C.F.R. §§ 172.300 to 172.338, inclusive, 172.400 to 172.407, inclusive, and 172.436 to 172.441, inclusive, of Subpart E.*
- (e) Packaging--49 C.F.R. §§ 173.1 to 173.13, inclusive, 173.21 to 173.40, inclusive, and 173.401 to 173.477, inclusive.*
- (f) Placarding--49 C.F.R. §§ 172.500 to 172.560, inclusive, and Appendices B and C.*
- (g) Security plans--49 C.F.R. §§ 172.800 to 172.804, inclusive.*
- (h) Shipping papers and emergency information--49 C.F.R. §§ 172.200 to 172.205, inclusive, and 172.600 to 172.606, inclusive.*

*3. The licensee shall also note the regulations of the United States Department of Transportation relating to the following modes of transportation:*

- (a) Air--49 C.F.R. Part 175;*
- (b) Public Highway--49 C.F.R. Parts 177 and 390 to 397, inclusive;*
- (c) Rail--49 C.F.R. §§ 174.1 to 174.86, inclusive, and 174.700 to 174.750, inclusive; and*
- (d) Vessel--49 C.F.R. §§ 176.1 to 176.99, inclusive, and 176.700 to 176.720, inclusive.*

*4. If the regulations of the United States Department of Transportation are not applicable to a shipment of licensed material, the licensee shall conform to the standards and requirements of the United States Department of Transportation specified in subsection 1 to*

*the same extent as if the shipment or transportation were subject to those regulations. A request for a modification, waiver or exemption from those requirements, and any notification referred to in those requirements, must be filed with, or made to, the Division.*

*Sec. 27. 1. Except as otherwise provided in subsection 4, each person who acquires an electronic brachytherapy system or an additional therapeutic X-ray system shall apply to the Division for registration of the machine within 30 days after installing the machine. The application must include, without limitation:*

- (a) A list of all authorized users, radiation therapy physicists and operators;*
- (b) The name of the radiation safety officer and radiation safety committee members;*
- (c) A copy of the most recent record of surveys, calculations and quality assurance checks on each machine;*
- (d) A current copy of the quality management program created pursuant to section 43 of this regulation;*
- (e) A current copy of the quality assurance program created pursuant to section 44 of this regulation; and*
- (f) The manufacturer's certification.*

*2. No medical therapy device may be used on a person until the facility has received a certificate of registration from the Division.*

*3. A separate registration is required for facilities which:*

- (a) Are not contiguous;*
- (b) Are not under a single radiation safety program; or*
- (c) Are not under the same management.*

*4. The provisions of this section do not apply to radiation devices which are in transit or in storage.*

**Sec. 28.** *1. Only a manufacturer's representative who is registered as a service provider with the State may install the electronic brachytherapy device if the installation includes work on:*

*(a) The shielding of the source of radiation;*  
*(b) The driving unit of the source of radiation; or*  
*(c) Any other electronic or mechanical component which may expose the source of radiation, reduce the shielding around the source of radiation or compromise the radiation safety of the system or the source of radiation.*

*2. Only a manufacturer's representative who is registered as a service provider with the State or an authorized medical physicist for electronic brachytherapy may adjust, maintain, repair or service an electronic brachytherapy device and must do so in accordance with the guidelines of the manufacturer.*

*3. A registrant shall maintain the record of any installation, maintenance, adjustment, service or repair of an electronic brachytherapy device for at least 5 years.*

**Sec. 29.** *1. Before a facility may install a new therapeutic X-ray device, or installs a therapeutic X-ray device with a higher energy output into an existing room, the facility must submit the following information for approval by the Division:*

*(a) General information concerning the facility, including, without limitation:*

- (1) The legal name of the facility;*
- (2) A telephone number and street address for the facility;*

*(3) The name, address, telephone number and registration or license number of the authorized medical physicist for electronic brachytherapy responsible for the preparation of the shielding plan;*

*(4) The name and telephone number of the facility supervisor; and*

*(5) A statement indicating whether or not the installation is for a new facility or a modification to an existing facility;*

*(b) Proof that a primary protective barrier covers all wall, floor and ceiling areas struck by the useful beam of the system;*

*(c) Proof that a secondary protective barrier covers all wall, floor and ceiling areas which are not covered by a primary protective barrier; and*

*(d) Information regarding the type and thickness of the portable shielding used to ensure compliance with NAC 459.400 to 459.624, inclusive, and sections 20 to 45, inclusive, of this regulation and a procedure which demonstrates the use of the portable shielding before treatment.*

*2. Each therapeutic X-ray system must have such primary and secondary protective barriers as are required to comply with the provisions of NAC 459.400 to 459.624, inclusive, and sections 20 to 45, inclusive, of this regulation.*

*3. Portable shielding may be used to comply with the provisions of NAC 459.400 to 459.624, inclusive, and sections 20 to 45, inclusive, of this regulation.*

**Sec. 30.** *1. A registrant shall pay an annual fee for the registration and inspection of an electronic brachytherapy device in the amount of \$4,400.*



*2. The registration fee is due within 30 days after the acquisition of the electronic brachytherapy system.*

*3. An annual renewal fee must be paid not later than the date on which the registration expires. If the fee is not received by that date, the registrant shall:*

*(a) Cease operating the radiation machine on that date; and*

*(b) Within 5 days after the registration expires, submit to the Division:*

*(1) An application for a renewal of the registration;*

*(2) The fee set forth in subsection 1; and*

*(3) A fee for late payment that is equal to twice the amount of the registration fee.*

**Sec. 31.** *1. A registrant for any therapeutic X-ray device shall require an authorized user to:*

*(a) Be an authorized user of radioactive sources for electronic brachytherapy pursuant to the radioactive material license of the registrant who had completed specific training on the device provided by the manufacturer and approved by the Division; or*

*(b) Be a physician who:*

*(1) Is licensed by this State as a physician pursuant to chapter 630 of NRS or an osteopathic physician pursuant to chapter 633 of NRS;*

*(2) Is certified in:*

*(I) Radiation oncology or therapeutic radiology by the American Board of Radiology;*

*(II) Radiation oncology by the American Osteopathic Board of Radiology;*

*(III) Radiology, with specialization in radiotherapy, as a Fellow of the Faculty of Radiology or Fellow of the Royal College of Radiologists of the United Kingdom; or*

*(IV) Therapeutic radiology by the Royal College of Physicians and Surgeons of Canada;*

*(3) Has completed specific training on the system provided by the manufacturer and approved by the Division; and*

*(4) Has had his or her training reviewed and approved by the Division.*

*2. An authorized user:*

*(a) Must be physically present during the initiation of all patient treatment or identify in writing an authorized medical physicist for electronic brachytherapy who is trained in the operation and emergency response for the system who will be physically present during the initiation of all patient treatments;*

*(b) Shall review the case of a patient to ensure that the therapeutic X-ray procedure is appropriate;*

*(c) Shall regularly review the progress of each patient receiving therapy and modify the originally prescribed dose if necessary; and*

*(d) Shall prevent the clinical use of a system in which a malfunction has been identified pursuant to the spot check required by section 40 of this regulation, until such time as the spot check has been evaluated and the malfunction corrected or the equipment repaired.*

*3. The training and experience required by subsection 1 must be obtained within the 7 years immediately preceding the date of the application, or the person must have related continuing education experience in the same type of radiation therapy on an annual basis.*

*4. The registrant shall retain all records of annual training for at least 3 years.*

*Sec. 32. 1. A registrant for any therapeutic X-ray device shall require an authorized medical physicist for electronic brachytherapy to:*

*(a) Be currently licensed as a therapeutic radiological physicist by a professional organization specified by the Division or in another state;*

*(b) Have completed specific training on the device provided by the manufacturer and approved by the Division; and*

*(c) Have had his or her training reviewed and approved by the Division.*

*2. An authorized medical physicist for electronic brachytherapy shall:*

*(a) Evaluate the output from the electronic brachytherapy device;*

*(b) Prepare the necessary dosimetric information;*

*(c) Supervise and review the treatment calculations before the initial treatment of any treatment site;*

*(d) Establish written procedures for performing a spot check pursuant to section 40 of this regulation;*

*(e) Supervise the conducting of a spot check required by section 40 of this regulation;*

*(f) Review a spot check conducted pursuant to section 40 of this regulation within 2 days after completion;*

*(g) Notify the registrant, in writing, of any failures detected during the spot check within 24 hours after the failure is detected;*

*(h) Consult with the authorized user in treatment planning, as needed; and*

*(i) Perform any calculations and assessments of patient treatments which may constitute medical events.*

*3. The training and experience required by subsection 1 must be obtained within the 7 years immediately preceding the date of the application, or the person must have related continuing education experience in the same type of radiation therapy on an annual basis.*

*4. The registrant shall retain all records of:*

*(a) Annual training for at least 3 years; and*

*(b) Initial training until the Division authorizes the disposal of the records.*

**Sec. 33.** *1. A registrant for any therapeutic X-ray system shall require a radiation safety officer to:*

*(a) Have completed specific training on the system provided by the manufacturer and approved by the Division;*

*(b) Be an authorized user or authorized medical physicist for electronic brachytherapy;*

*(c) Be certified by:*

*(1) The American Board of Health Physics in Comprehensive Health Physics;*

*(2) The American Board of Radiology in Radiological Physics, Therapeutic*

*Radiological Physics or Medical Nuclear Physics;*

*(3) The American Board of Nuclear Medicine;*

*(4) The American Board of Science in Nuclear Medicine; or*

*(5) The American Board of Medical Physics; or*

*(d) Have completed classroom and laboratory training, including, without limitation:*

*(1) One hundred hours of radiation physics and instrumentation;*

*(2) Thirty hours of radiation protection;*  
*(3) Twenty hours of mathematics pertaining to the use and measurement of radiation;*  
*(4) Twenty hours of radiation biology;*  
*(5) Thirty hours of medical therapy training; and*  
*(6) One year of full-time experience in radiation safety at a medical institution under the supervision of a radiation safety officer.*

*2. A radiation safety officer shall:*

*(a) Implement a radiation safety program in the facility;*  
*(b) Ensure that radiation safety activities are performed in accordance with approved procedures and regulatory requirements in the daily operation of a therapeutic X-ray system;*  
*(c) Promptly investigate and implement corrective actions when:*  
*(1) An incident which compromises safety occurs;*  
*(2) A reportable event occurs; or*  
*(3) An event occurs which deviates from approved radiation safety practices;*  
*(d) Prepare a written report of any investigation conducted pursuant to paragraph (c) and the corrective action taken;*  
*(e) Carry out written policies and procedures for:*  
*(1) The safe use of a therapeutic X-ray system;*  
*(2) The performance of radiation surveys as necessary;*  
*(3) The performance of checks on survey instruments and other safety equipment; and*  
*(4) The training of personnel who frequent or work in areas where radiation is present;*  
*(f) Keep on file:*

- (1) A copy of all records and reports required by the Division;*
- (2) A copy of NAC 459.010 to 459.950, inclusive, and sections 2 to 45, inclusive, of this regulation;*
- (3) A copy of each registration correspondence with the Division; and*
- (4) The written policies and procedures required by this section; and*
- (g) Review the occupational radiation exposure of all personnel working with X-ray systems at least once every 3 months.*

*3. The training and experience in subsection 1 must be obtained within the 7 years immediately preceding the date of the application, or the person must have related continuing education experience in the same type of radiation therapy on an annual basis.*

*4. The registrant shall retain all records of:*

- (a) Annual training for at least 3 years; and*
- (b) Initial training until the Division authorizes the disposal of the records.*

*5. As used in this section, “radiation safety officer” does not include a radiation safety officer as the term is defined in NAC 459.074.*

**Sec. 34.** *1. A registrant for any therapeutic X-ray system shall require a person who is not an authorized user to:*

*(a) Operate the therapeutic X-ray system solely under the direct supervision of an authorized user;*

*(b) Be certified as a radiation therapy technologist by the American Registry of Radiologic Technologists or a certifying organization accepted by the American Registry of Radiologic Technologists; and*

*(c) Have completed specific training on the system provided by the manufacturer and approved by the Division.*

*2. The training and experience required pursuant to subsection 1 must be obtained within the 7 years immediately preceding the date of the application, or the person must have related continuing education experience in the same type of radiation therapy on an annual basis.*

*3. The registrant shall retain all records of:*

*(a) Annual training for at least 3 years; and*

*(b) Initial training until the Division authorizes the disposal of the records.*

**Sec. 35.** *A registrant shall annually provide instruction on radiation safety to each person who provides patient care and treatment planning for patients. The instruction must include, without limitation:*

*1. Instruction on the operation of each device used by the person;*

*2. Safety procedures; and*

*3. Any updates on clinical use of each of those devices.*

**Sec. 36. 1.** *A therapeutic X-ray system must not be used for the irradiation of patients unless the facility complies with the criteria of the United States Food and Drug Administration for systems approved for human use.*

*2. When not in use, the therapeutic X-ray system must be secured and unauthorized use or access prevented.*

*3. When a patient must be held in position for radiation therapy, mechanical supporting or restraining devices must be used.*

*4. A copy of the current operating and emergency procedures must be kept in a visible place in the treatment room.*

*5. Except for the patient, a person must not be exposed to radiation during the treatment and the facility must use portable shielding to reduce the occupational dose.*

*6. A registrant shall:*

*(a) Notify the radiation safety officer specified in section 33 of this regulation, or the officer's designee, and an authorized user as soon as practicable, if a patient or human research subject has a medical emergency and dies;*

*(b) Allow a person in the treatment room during treatment only after obtaining the approval of the authorized user, radiation safety officer specified in section 33 of this regulation or authorized medical physicist for electronic brachytherapy;*

*(c) Prevent the operation of more than one device which produces radiation in a treatment room; and*

*(d) Develop, implement and maintain written procedures for responding to a situation in which an operator is unable to complete the treatment in compliance with the written directive.*

*The procedures must include, without limitation:*

*(1) Instructions for responding to equipment failures and the names of the persons who are responsible for carrying out any corrective actions;*

*(2) The process for restricting access to and marking the treatment area to minimize the risk of inadvertent exposure to radiation; and*



*(3) The names and telephone numbers of the authorized users, authorized medical physicist for electronic brachytherapy and radiation safety officer specified in section 33 of this regulation who must be contacted if the system operates abnormally.*

**Sec. 37.** *1. The registrant shall perform, or cause to be performed, a radiation protection survey on each new facility or any existing facility which has not been previously surveyed.*

*2. Each facility location authorized to use a therapeutic X-ray device must possess portable monitoring equipment which has been calibrated appropriately and which includes, without limitation, a radiation measurement survey instrument capable of measuring dose rates over the range 0.1  $\mu$ Sv (0.01 mrem) per hour to 10 mSv (1000 mrem) per hour. The instrument must be calibrated annually.*

*3. The radiation protection survey must:*

*(a) Be performed by, or under the direction of, an authorized medical physicist for electronic brachytherapy or the radiation safety officer specified in section 33 of this regulation;*

*(b) Be performed under the following conditions:*

- (1) The beam must be on;*
- (2) The largest clinically available treatment field must be used;*
- (3) A scattering phantom in the useful beam of radiation for secondary barriers must be present;*
- (4) A phantom must not be used for primary barriers; and*

*(5) Portable shielding in the primary and secondary beams must be taken into consideration; and*

*(c) Ensure that the levels of radiation in both restricted and unrestricted areas are not likely to cause exposures to persons in excess of the limits set by this chapter.*

*4. In addition to the original survey, a radiation protection survey must be performed:*

*(a) After any changes are made in the shielding of the treatment room or the portable shielding;*

*(b) After any changes are made in the location of the therapeutic X-ray system within the treatment room;*

*(c) After relocating the therapeutic X-ray system; and*

*(d) Before using the therapeutic X-ray system in a manner that may result in increased radiation levels in areas outside the treatment room.*

*5. The record of the survey must include, without limitation:*

*(a) All instances where the facility is in violation of applicable regulations;*

*(b) The date the measurements were taken;*

*(c) The reason the survey was required;*

*(d) The name of the manufacturer of the system surveyed;*

*(e) The model and serial numbers of the system surveyed;*

*(f) The instrument used to measure the radiation levels;*

*(g) A diagram of the areas surrounding the treatment room which were surveyed;*

*(h) The measured dose rates at several points in each area, expressed in microsieverts or millirems per hour;*

*(i) The calculated maximum level of radiation over a period of 1 week for each restricted and unrestricted area; and*

*(j) The name and signature of the person who conducted the survey.*

**Sec. 38. 1.** *An authorized medical physicist for electronic brachytherapy shall validate the output of an electronic brachytherapy system.*

*2. Measurements for calibration must be made:*

*(a) For each X-ray tube;*

*(b) After any repair which affects the generation of the X-ray beam; or*

*(c) At any time indicated by the spot check required by section 40 of this regulation.*

*3. Calibration must include, without limitation, if applicable:*

*(a) A determination of the output of the system within 2 percent of the expected value, or a determination of the output if there is no expected value;*

*(b) A determination of the timer accuracy and linearity over the typical range of use;*

*(c) A determination of the proper operation of the devices used for back-up control of exposure;*

*(d) An evaluation of whether the distribution of the relative dose about the source is within 5 percent of that which is expected; and*

*(e) A determination of the positioning of an X-ray tube within 1 millimeter in the applicator.*

*4. The validation of the output must use a dosimetry system using approved guidelines, including, without limitation, the guidelines of the American Association of Physicists in Medicine to measure the output.*

*5. A registrant shall make the calibration measurements required by this section in accordance with any current recommendations from a nationally recognized professional association, including, without limitation, the American Association of Physicists in Medicine, or an equivalent alternative method, for electronic brachytherapy systems. If a protocol from a nationally recognized professional association is not available, a registrant shall use the protocol included in the operation manual for the system from the manufacturer.*

*Sec. 39. 1. For an electronic brachytherapy system, calibration of the dosimetry system must include the source and energy in use and must use an established protocol such as the TG-21 protocol established by the American Association of Physicists in Medicine.*

*2. A registrant shall ensure that a dosimetry system is available to take measurements during a quality assurance check. This system may be the same system used for calibrating the electronic brachytherapy system pursuant to section 38 of this regulation.*

*3. A registrant shall keep a record of each calibration, intercomparison and comparison of the dosimetry system for the duration of the registration. The record must include:*

- (a) The date of the calibration, intercomparison or comparison;*
- (b) The model number and serial number of the system which was calibrated, intercompared or compared;*
- (c) The name of the person who performed the calibration, intercomparison or comparison; and*
- (d) If an intercomparison is performed, evidence that the intercomparison was performed by, or under the direct supervision of, the authorized medical physicist for electronic brachytherapy of record.*

*4. A registrant shall furnish a copy of all survey and calibration records to the Division within 30 days after the completion of the survey or calibration.*

**Sec. 40.** *1. A registrant shall ensure that a program is in place to perform spot checks on each electronic brachytherapy system:*

*(a) At the beginning of each day during which the system will be used;*

*(b) Each time the system is moved to a new room or site; and*

*(c) After the installation of an X-ray tube.*

*2. The spot check must ensure the following components are operating properly:*

*(a) The indicator lights for radiation exposure on the electronic brachytherapy system and on the control console;*

*(b) The viewing and intercom systems in each facility, if applicable;*

*(c) The radiation monitors, if applicable; and*

*(d) The integrity of all cables, catheters or parts of the system that carry high voltages.*

*3. A spot check of the dosimetry of a system must include a check which indicates that the output of the X-ray source is within 3 percent of the expected value, including, as appropriate:*

*(a) Output as a function of time;*

*(b) Output as a function of a setting on a monitor chamber;*

*(c) Verification of the consistency of the dose distribution to within 3 percent of that found during calibration;*

*(d) Validation of the operation of methods of positioning to ensure that the treatment dose exposes the intended location within 1 millimeter; and*

*(e) Inspection of all treatment components for imperfections on the day of use.*

*4. A registrant shall retain a record of each spot check for at least 3 years. The record must include:*

- (a) The date of the spot check;*
- (b) The name of the manufacturer, model number and serial number of the electronic brachytherapy system checked;*
- (c) Notations which indicate the operability of radiation monitors, indicator lights for source exposure, viewing and intercom systems, applicators, source transfer tubes, transfer tube-applicator interfaces and the accuracy of source positioning, as applicable; and*
- (d) The name and signature of the person who performed the spot check.*

**Sec. 41.** *A registrant who provides services for mobile electronic brachytherapy shall:*

- 1. Check all survey instruments before medical use at each location of use or on each day of use, whichever is more frequent;*
- 2. Account for the X-ray tube in the system before departing from a location; and*
- 3. Perform all the periodic spot checks required by section 40 of this regulation at each location.*

**Sec. 42.** *1. Where applicable, an authorized medical physicist for electronic brachytherapy shall perform an acceptance test on the treatment planning system of computer systems used for therapy, using a published protocol which is accepted by a nationally recognized body. The acceptance test must verify, as applicable:*

- (a) The input parameters for a source which are required by the dose-calculation algorithm;*

*(b) The accuracy of dose, dwell-time and treatment-time calculations at representative points;*

*(c) The accuracy of isodose plots and graphic displays;*

*(d) The accuracy of the software used to determine source positions from images; and*

*(e) If the treatment planning system is different from the treatment delivery system, the accuracy of electronic transfer of the treatment delivery parameters to the treatment delivery unit from the treatment planning system.*

*2. The position indicators in an applicator must be compared to the actual position of the source or planned dwell positions as appropriate at the time of commissioning.*

*3. Before each regimen for patient treatment, the parameters for the treatment must be evaluated and approved by the authorized user and the authorized medical physicist for electronic brachytherapy for accuracy through means which are independent of those that were used for the determination of the parameters.*

**Sec. 43.** *1. Each registrant shall establish and maintain a written quality management program to ensure that a radiation therapy system is used as directed by the authorized user.*

*The program must include, without limitation, the following objectives:*

*(a) Except where a delay to provide a written directive would jeopardize the health of a patient, a written directive must be prepared before a dose of therapeutic radiation is administered;*

*(b) If the emergent nature of the condition of a patient threatens the health of the patient, an oral directive to administer treatment is acceptable, so long as the information contained in*

*the oral directive is documented immediately in the record of the patient and a written directive is prepared within 24 hours;*

*(c) If a delay to provide a written revision to an existing written directive jeopardizes the health of a patient, an oral revision to the existing written directive may be given, so long as the oral revision is immediately documented in the record of the patient and a revised written directive is signed by the authorized user within 48 hours;*

*(d) A written directive which changes an existing written directive may be made for any therapeutic procedure, so long as the revised directive is signed and dated by an authorized user before the next administration of the electronic brachytherapy dose or fractional dose;*

*(e) The identity of the patient as being the person named in the written directive must be verified by more than one method before the administration of any therapeutic radiation;*

*(f) The final plans of treatment and any related calculations must be the same as those specified in the written directive;*

*(g) Each administration of a dose of therapeutic radiation must comply with the written directive; and*

*(h) Any unintended deviation from the written directive must be identified and evaluated, and appropriate action must be taken.*

*2. A registrant shall develop procedures for and conduct a review of the program, including, without limitation:*

*(a) An evaluation of a representative sample of administrations to patients within the review period through a procedure which must be submitted to the Division;*

*(b) An evaluation of all reportable events within the review period; and*



*(c) An evaluation of all medical events within the review period to verify that the actions taken comply with the program.*

*3. A review of the program must be conducted at least once every 12 months and a record of each review must be maintained for inspection by the Division for at least 3 years. The record must include any evaluations and the findings of the reviews.*

*4. A registrant shall evaluate each review to determine the effectiveness of the program and shall make modifications as needed to comply with the provisions of this section.*

*5. A registrant shall:*

*(a) Within 30 days after the discovery of a reportable event:*

*(1) Assemble the relevant facts, including, without limitation, the cause of the reportable event; and*

*(2) Identify any corrective action which is required to prevent a reoccurrence of the reportable event; and*

*(b) Retain a record of the facts and corrective action taken for at least 3 years.*

*6. A registrant shall maintain each written directive for at least 3 years.*

*7. A registrant may modify a program specified in subsection 1, so long as the effectiveness of the program is not decreased. Any such modification must be submitted to the Division within 30 days after the modification is made.*

*8. Each applicant for a new registration shall submit to the Division a written program specified in subsection 1 as part of the application for registration and shall carry out the program upon issuance of the registration.*

*9. A registrant shall keep records of each medical event until the termination of the registration.*

*Sec. 44. 1. A facility which uses an electronic brachytherapy system must develop and implement a quality assurance program in compliance with the approval of the system by the United States Food and Drug Administration. The program must be used to minimize deviations from facility procedures and to document preventative measures taken before any serious injury of a patient or medical event involving a therapeutic dose occurred. The program must include, without limitation:*

- (a) Treatment planning, chart and treatment field parameters;*
- (b) Patient simulation, verification of catheter placement and device exchange procedures;*
- (c) Dose calculation and review procedures; and*
- (d) Reviews of daily treatment records.*

*2. Any deviation from a prescribed treatment or from the program and operating procedures of the facility must be investigated and brought to the attention of the authorized user, authorized medical physicist for electronic brachytherapy and radiation safety officer specified in section 33 of this regulation.*

*3. A review of the program must be conducted at least every 3 months and must include all deviations from any prescribed treatment. A signed and dated record of each review detailing the evaluation and findings of the review must be kept and made available for inspection by the Division for at least 3 years.*

*Sec. 45. In addition to the requirements of NAC 459.400 to 459.624, inclusive, registrants of portable equipment which is hand-held and facilities which house such equipment must meet the following requirements:*

*1. A registrant shall establish a safe operating policy, and all operators shall sign a form acknowledging that they understand the policy. The policy must, at a minimum:*

- (a) Require proper operation of the unit, consistent with the manufacturer's manual;*
- (b) Ensure that the device is not used in an uncontrolled area, such as a waiting room or hallway;*
- (c) Require that the device is held without motion throughout radiography using a suitable stand or other method to immobilize portable equipment during the radiography;*
- (d) Require that any optional, removable secondary radiation block or protection features be installed and used during radiography, if the unit was designed with those features;*
- (e) Ensure that there are no ancillary persons within a radius of at least 2 meters from the tube head when using the portable equipment which is hand-held; and*
- (f) Require an operator to comply with the provisions of NAC 459.554 and 459.556, when applicable.*

*2. Each operator of portable equipment which is hand-held must be specifically trained to operate the equipment. Training on the use of the device must be documented and include:*

- (a) Proper positioning of the device to ensure an adequate protection position;*
- (b) Limitations of the use of position indicating devices that require longer distances to the face of the patient;*
- (c) Diagrams of the protected position and location in relationship to the device;*

*(d) Diagrams of the effect of improper distance of removal of the shielding device; and*

*(e) Diagrams of common examples of improper positioning of the device or location of the operator.*

*3. A written security policy must be established to prevent unauthorized use of the portable equipment which is hand-held.*

*4. Portable equipment which is hand-held:*

*(a) Must be kept in a secured location when not in use;*

*(b) Must only be used for its designed purpose, as specified by the manufacturer;*

*(c) Must be maintained and serviced in accordance with the manufacturer's recommendations; and*

*(d) May only be used at the location where it is registered.*

*5. When operating portable equipment which is hand-held, an operator shall wear:*

*(a) A lead apron and thyroid collar; and*

*(b) Whole body and extremity dose monitoring devices.*

*6. All portable equipment which is hand-held must comply with the applicable performance standards of 21 C.F.R. § 1020.30 to 21 C.F.R. §1020.40, inclusive, which were in effect at the time the unit was manufactured.*

*7. Upon prior approval of the Division, source to image distance and exposure switch locations may be adjusted to accommodate the use of portable equipment which is hand-held.*

*8. Any person who sells, leases, transfers, lends, disposes, assembles or acquires portable equipment which is hand-held in this State or sells, leases, transfers or disposes of or acquires*

*a radiation machine in this State shall notify the Division within 15 days and provide the information required by NAC 459.166.*

**Sec. 46.** NAC 459.010 is hereby amended to read as follows:

459.010 As used in NAC 459.010 to 459.950, inclusive, *and sections 2 to 45, inclusive, of this regulation*, unless the context otherwise requires, the words and terms defined in NAC 459.012 to 459.116, inclusive, *and sections 2 to 19, inclusive, of this regulation* have the meanings ascribed to them in those sections.

**Sec. 47.** NAC 459.0192 is hereby amended to read as follows:

459.0192 “Appendix B” means Appendix B to 10 C.F.R. §§ 20.1001 to 20.2402, inclusive, as those provisions existed on ~~October 13, 1999.~~ *November 30, 2007, with the following revisions to the List of Elements:*

*1. “Femium (Fm) with Atomic Number 100” shall be deemed to mean “Fermium (Fm) with Atomic Number 100”;*

*2. “Hafniim (Hf) with Atomic Number 72” shall be deemed to mean “Hafnium (Hf) with Atomic Number 72”; and*

*3. “Tantaium (Ta) with Atomic Number 73” shall be deemed to mean “Tantalum (Ta) with Atomic Number 73.”*

**Sec. 48.** NAC 459.022 is hereby amended to read as follows:

459.022 “By-product material” ~~has the meaning ascribed to it in subsection 1 of NRS 459.010.~~ *means:*

*1. Any radioactive material, except special nuclear material, yielded in or made radioactive by exposure to the radiation incident to the process of producing or making use of special nuclear material;*

*2. The tailings or wastes produced by the extraction or concentration of uranium or thorium from any ore which is processed primarily for its source material content, including, without limitation, discrete surface wastes resulting from uranium solution extraction processes, except for underground ore bodies which are depleted by operations to extract such solutions;*

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

*4. Any material which:*

*(a) Is an accelerator-produced radioactive material; and*

*(b) Is produced, extracted or converted after extraction for use in a commercial, medical or research activity before, on or after August 8, 2005; or*

*5. Except for source material, any discrete source of naturally occurring radioactive material which:*

*(a) The Nuclear Regulatory Commission, in consultation with the Administrator of the United States Environmental Protection Agency, the Secretary of Energy, the Secretary of Homeland Security and the head of any other appropriate federal agency, determines would pose a threat similar to the threat posed by a discrete source of radium-226 to the public health and safety or the common defense and security; and*

*(b) Is extracted or converted after extraction for use in a commercial, medical or research activity before, on or after August 8, 2005.*

**Sec. 49.** NAC 459.076 is hereby amended to read as follows:

459.076 “Radioactive material” means any solid, liquid or gaseous material which emits radiation spontaneously. *The term includes by-product material.*

**Sec. 50.** NAC 459.1095 is hereby amended to read as follows:

459.1095 “Total effective dose equivalent” means the sum of the ~~[deep-dose]~~ *effective dose* equivalent *for external exposures* and the committed effective dose equivalent ~~[.]~~ *for internal exposures.*

**Sec. 51.** NAC 459.180 is hereby amended to read as follows:

459.180 1. The provisions of NAC 459.180 to 459.313, inclusive, provide for the licensing of radioactive materials. No person may receive, possess, use, transfer, own, ~~[or]~~ acquire, *, manufacture or produce* radioactive material except as authorized in a specific or general license issued pursuant to NAC 459.180 to 459.313, inclusive, or as otherwise provided in those sections ~~[.]~~ *with the following exceptions:*

*(a) A specifically licensed government agency or federally recognized Indian tribe that possesses and uses accelerator-produced radioactive material or discrete sources of radium-226 for which a license amendment is required to authorize the activities in this section may continue to use such materials for uses allowed pursuant to this section until the date of the Nuclear Regulatory Commission’s final licensing determination, so long as the licensee submitted an amendment application on or before June 2, 2008.*

*(b) A government agency or federally recognized Indian tribe that possesses and uses accelerator-produced radioactive material or discrete sources of radium-226 for which a specific license is required by this section may continue to use such material for uses allowed pursuant to this section until the date of the Nuclear Regulatory Commission's final licensing determination, so long as the agency or Indian tribe submitted an application for a license authorizing activities involving those materials on or before December 1, 2008.*

*(c) Except as otherwise provided in paragraph (a), any other licensee who possesses and uses accelerator-produced radioactive material or discrete sources of radium-226 for which a license amendment is required to authorize the activities in this section may continue to use such materials for uses allowed pursuant to this section until the date of the Nuclear Regulatory Commission's final licensing determination, so long as the licensee submitted an amendment application within 6 months after the waiver expiration date of August 7, 2009, or within 6 months after the date of an earlier termination of the waiver as noticed by the Nuclear Regulatory Commission, whichever is earlier.*

*(d) Except as otherwise provided in paragraph (b), any other person who possesses and uses accelerator-produced radioactive material or discrete sources of radium-226 for which a specific license is required by this section may continue to use such material for uses allowed pursuant to this section until the date of the Nuclear Regulatory Commission's final licensing determination, so long as the person submits a license application within 12 months after the waiver expiration date of August 7, 2009, or within 12 months after the date of an earlier termination of the waiver as noticed by the Nuclear Regulatory Commission, whichever is earlier.*



*(e) Persons exempt as provided in this section.*

*(f) Persons exempt pursuant to 10 C.F.R. § 150.*

2. In addition to the requirements of NAC 459.180 to 459.313, inclusive, all licensees are subject to the requirements of NAC 459.010 to 459.142, inclusive, 459.320 to 459.374, inclusive, and 459.780 to 459.794, inclusive. Licensees engaged in industrial radiography are subject to the requirements of NAC 459.737, and licensees using radioactive materials in the healing arts are subject to the requirements of NAC ~~459.3066,~~ 459.3801 and 459.3805.

**Sec. 52.** NAC 459.184 is hereby amended to read as follows:

459.184 1. Except as otherwise provided in subsection ~~2,~~ 3, any person is exempt from NAC 459.180 to 459.313, inclusive, *and section 25 of this regulation* to the extent that he receives, possesses, uses, transfers, owns or acquires products or materials containing:

(a) Radioactive material in concentrations not in excess of those listed in NAC 459.186; or

(b) Naturally occurring radioactive material that contains less than 5 picocuries *(0.185 becquerels)* of ~~radium-226~~ *radium-226* per gram of material.

2. *Any person who possesses by-product material received or acquired before September 25, 1971, under the general license then provided pursuant to 10 C.F.R. § 31.4, or a similar general license of a state, is exempt from the requirements of NAC 459.180 to 459.3184, inclusive, 459.737 and 459.738 to the extent that the person possesses, uses, transfers or owns such by-product material.*

3. A person shall not introduce radioactive material into a product or material knowing or having reason to believe that it will be transferred to persons exempt under subsection 1 or the equivalent regulations of the Nuclear Regulatory Commission or any agreement state, except in

accordance with a specific license issued pursuant to NAC 459.276 or the general licenses provided in NAC 459.210.

~~{3-}~~ 4. *A manufacturer, processor or producer of a product or material is exempt from the requirements for a license set forth in 10 C.F.R. § 81 and from NAC 459.180 to 459.313, inclusive, to the extent that the person transfers by-product material contained in a product or material:*

*(a) In concentrations not in excess of those specified in NAC 459.186; and*

*(b) Introduced into the product or material by a licensee holding a specific license issued by the Division expressly authorizing such introduction.*

*↪ This exemption does not apply to the transfer of by-product material contained in any food, beverage, cosmetic, drug or other product designed for ingestion or inhalation by, or application to, a human being.*

5. Except as otherwise provided in subsections ~~{4-}~~ 6 and ~~{5-}~~ 7, any person is exempt from the provisions of NAC 459.010 to 459.950, inclusive, *and sections 2 to 45, inclusive, of this regulation* to the extent that he receives, possesses, uses, transfers, owns or acquires radioactive material in individual quantities each of which does not exceed the applicable quantity set forth in NAC 459.188.

~~{4-}~~ 6. The provisions of NAC 459.180 to 459.313, inclusive, *and section 26 of this regulation* do not authorize the production, packaging or repackaging of radioactive material for purposes of commercial distribution or the incorporation of radioactive material into products intended for commercial distribution.

~~[5.]~~ 7. A person shall not, for purposes of commercial distribution, transfer radioactive material in the individual quantities in NAC 459.188, knowing or having reason to believe that such quantities of radioactive material will be transferred to persons exempt under subsections ~~[3.]~~ 5 and ~~[4.]~~ 6 or the equivalent regulations of the Nuclear Regulatory Commission or any agreement state, except in accordance with a specific license issued by the Nuclear Regulatory Commission pursuant to 10 C.F.R. § 32.18 or by the Division pursuant to NAC 459.278. The license must state that the radioactive material may be transferred by the licensee to persons exempt under subsections ~~[3.]~~ 5 and ~~[4.]~~ 6 or the equivalent regulations of the Nuclear Regulatory Commission or any agreement state.

*8. Except for by-product material combined within a device placed in use before May 3, 1999, or as otherwise authorized by this chapter, no person may combine quantities of by-product material covered by this exemption in such a manner that the aggregate quantity exceeds the limits set forth in NAC 459.188 for purposes of producing an increased radiation level.*

**Sec. 53.** NAC 459.188 is hereby amended to read as follows:

459.188 Exempt quantities are:

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Radioactive

material

Microcuries

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Radioactive		Radioactive	
material	Microcuries	material	Microcuries
Antimony - 122 (Sb 122)	100	Carbon - 14 (C 14)	100
Antimony - 124 (Sb 124)	10	Cerium - 141 (Ce 141)	100
Antimony - 125 (Sb 125)	10	Cerium - 143 (Ce 143)	100
Arsenic - 73 (As 73)	100	Cerium - 144 (Ce 144)	1
Arsenic - 74 (As 74)	10	Cesium - 129 (Cs 129)	100
Arsenic - 76 (As 76)	10	Cesium - 131 (Cs 131)	1,000
Arsenic - 77 (As 77)	100	Cesium - 134m (Cs 134m)	100
Barium - 131 (Ba 131)	10	Cesium - 134 (Cs 134)	1
Barium - 133 (Ba 133)	10	Cesium - 135 (Cs 135)	10
Barium - 140 (Ba 140)	10	Cesium - 136 (Cs 136)	10
Bismuth - 210 (Bi 210)	1	Cesium - 137 (Cs 137)	10
Bromine - 82 (Br 82)	10	Chlorine - 36 (Cl 36)	10
Cadmium - 109 (Cd 109)	10	Chlorine - 38 (Cl 38)	10
Cadmium - 115m (Cd 115m)	10	Chromium - 51 (Cr 51)	1,000
Cadmium - 115 (Cd 115)	100	Cobalt - 57 (Co 57)	100
Calcium - 45 (Ca 45)	10	Cobalt - 58m (Co 58m)	10
Calcium - 47 (Ca 47)	10	Cobalt - 58 (Co 58)	10

Radioactive		Radioactive	
material	Microcuries	material	Microcuries
Cobalt - 60 (Co 60)	1	<i>Germanium-68 (Ge 68)</i>	<i>10</i>
Copper - 64 (Cu 64)	100	Germanium - 71 (Ge 71)	100
Dysprosium - 165 (Dy 165)	10	<i>Gold-195 (Au 195)</i>	<i>10</i>
Dysprosium - 166 (Dy 166)	100	Gold - 198 (Au 198)	100
Erbium - 169 (Er 169)	100	Gold - 199 (Au 199)	100
Erbium - 171 (Er 171)	100	Hafnium - 181 (Hf 181)	10
Europium - 152 (Eu 152)9.2h	100	Holmium - 166 (Ho 166)	100
Europium - 152 (Eu 152)13 yr	1	Hydrogen - 3 (H 3)	1,000
Europium - 154 (Eu 154)	1	Indium - 111 (In 111)	100
Europium - 155 (Eu 155)	10	Indium - 113m (In 113m)	100
Fluorine - 18 (F 18)	1,000	Indium - 114m (In 114m)	10
Gadolinium - 153 (Gd 153)	10	Indium - 115m (In 115m)	100
Gadolinium - 159 (Gd 159)	100	Indium - 115 (In 115)	10
Gallium - 67 (Ga 67)	100	Iodine - 123 (I 123)	100
Gallium - 72 (Ga 72)	10	Iodine - 125 (I 125)	1
		Iodine - 126 (I 126)	1
		Iodine - 129 (I 129)	0.1

Radioactive		Radioactive	
material	Microcuries	material	Microcuries
Iodine - 131 (I 131)	1	Mercury - 197m (Hg 197m)	100
Iodine - 132 (I 132)	10	Mercury - 197 (Hg 197)	100
Iodine - 133 (I 133)	1	Mercury - 203 (Hg 203)	10
Iodine - 134 (I 134)	10	Molybdenum - 99 (Mo 99)	100
Iodine - 135 (I 135)	10	Neodymium - 147 (Nd 147)	100
Iridium - 192 (Ir 192)	10	Neodymium - 149 (Nd 149)	100
Iridium - 194 (Ir 194)	100	Nickel - 59 (Ni 59)	100
Iron - 52 (Fe 52)	10	Nickel - 63 (Ni 63)	10
Iron - 55 (Fe 55)	100	Nickel - 65 (Ni 65)	100
Iron - 59 (Fe 59)	10	Niobium - 93m (Nb 93m)	10
Krypton - 85 (Kr 85)	100	Niobium - 95 (Nb 95)	10
Krypton - 87 (Kr 87)	10	Niobium - 97 (Nb 97)	10
Lanthanum - 140 (La 140)	10	Osmium - 185 (Os 185)	10
Lutetium - 177 (Lu 177)	100	Osmium - 191m (Os 191m)	100
Manganese - 52 (Mn 52)	10	Osmium - 191 (Os 191)	100
Manganese - 54 (Mn 54)	10	Osmium - 193 (Os 193)	100
Manganese - 56 (Mn 56)	10	Palladium - 103 (Pd 103)	100

Radioactive		Radioactive	
material	Microcuries	material	Microcuries
Palladium - 109 (Pd 109)	100	Rhenium - 188 (Re 188)	100
Phosphorus - 32 (P 32)	10	Rhodium - 103m (Rh 103m)	100
Platinum - 191 (Pt 191)	100	Rhodium - 105 (Rh 105)	100
Platinum - 193m (Pt 193m)	100	Rubidium - 81 (Rb 81)	10
Platinum - 193 (Pt 193)	100	Rubidium - 86 (Rb 86)	10
Platinum - 197m (Pt 197m)	100	Rubidium - 87 (Rb 87)	10
Platinum - 197 (Pt 197)	100	Ruthenium - 97 (Ru 97)	100
Polonium - 210 (Po 210)	0.1	Ruthenium - 103 (Ru 103)	10
Potassium - 42 (K 42)	10	Ruthenium - 105 (Ru 105)	10
Potassium - 43 (K 43)	10	Ruthenium - 106 (Ru 106)	1
Praseodymium - 142 (Pr 142)	100	Samarium - 151 (Sm 151)	10
Praseodymium - 143 (Pr 143)	100	Samarium - 153 (Sm 153)	100
Promethium - 147 (Pm 147)	10	Scandium - 46 (Sc 46)	10
Promethium - 149 (Pm 149)	10	Scandium - 47 (Sc 47)	100
Rhenium - 186 (Re 186)	100	Scandium - 48 (Sc 48)	10
		Selenium - 75 (Se 75)	10
		Silicon - 31 (Si 31)	100

Radioactive		Radioactive	
material	Microcuries	material	Microcuries
Silver - 105 (Ag 105)	10	Tellurium - 125m (Te 125m)	10
Silver - 110m (Ag 110m)	1	Tellurium - 127m (Te 127m)	10
Silver - 111 (Ag 111)	100	Tellurium - 127 (Te 127)	100
Sodium - 22 (Na 22)	10	Tellurium - 129m (Te 129m)	10
Sodium - 24 (Na 24)	10	Tellurium - 129 (Te 129)	100
Strontium - 85 (Sr 85)	10	Tellurium - 131m (Te 131m)	10
Strontium - 89 (Sr 89)	1	Tellurium - 132 (Te 132)	10
Strontium - 90 (Sr 90)	0.1	Terbium - 160 (Tb 160)	10
Strontium - 91 (Sr 91)	10	Thallium - 200 (Tl 200)	100
Strontium - 92 (Sr 92)	10	Thallium - 201 (Tl 201)	100
Sulphur - 35 (S 35)	100	Thallium - 202 (Tl 202)	100
Tantalum - 182 (Ta 182)	10	Thallium - 204 (Tl 204)	10
Technetium - 96 (Tc 96)	10	Thulium - 170 (Tm 170)	10
Technetium - 97m (Tc 97m)	100	Thulium - 171 (Tm 171)	10
Technetium - 97 (Tc 97)	100	Tin - 113 (Sn 113)	10
Technetium - 99m (Tc 99m)	100	Tin - 125 (Sn 125)	10
Technetium - 99 (Tc 99)	10	Tungsten - 181 (W 181)	10



Radioactive		Radioactive	
material	Microcuries	material	Microcuries
Tungsten - 185 (W 185)	10	Zirconium - 95 (Zr 95)	10
Tungsten - 187 (W 187)	100	Zirconium - 97 (Zr 97)	10
Vanadium - 48 (V 48)	10	Any radioactive material not	
Xenon - 131m (Xe 131m)	1,000	listed above other than	
Xenon - 133 (Xe 133)	100	alpha emitting radioactive	
Xenon - 135 (Xe 135)	100	material <span style="color: red;">H</span>	<span style="color: blue;">0.1</span>
Ytterbium - 175 (Yb 175)	100		
Yttrium - 87 (Y 87)	10		
<span style="color: blue;">Yttrium - 88 (Y88)</span>	<span style="color: blue;">10</span>		
Yttrium - 90 (Y 90)	10		
Yttrium - 91 (Y 91)	10		
Yttrium - 92 (Y 92)	100		
Yttrium - 93 (Y 93)	100		
Zinc - 65 (Zn 65)	10		
Zinc - 69m (Zn 69m)	100		
Zinc - 69 (Zn 69)	1,000		
Zirconium - 93 (Zr 93)	10		

**Sec. 54.** NAC 459.190 is hereby amended to read as follows:

459.190 1. Except for persons who apply radioactive material to, or persons who incorporate radioactive material into, the following products, any person is exempt from NAC 459.010 to 459.950, inclusive, *and sections 2 to 45, inclusive, of this regulation* to the extent that he receives, possesses, uses, transfers, owns or acquires the following products:

(a) Timepieces, hands or dials containing not more than the following specified quantities of radioactive material and not exceeding the following specified levels of radiation:

- (1) Twenty-five millicuries (925 megabecquerels) of tritium per timepiece.
- (2) Five millicuries (185 megabecquerels) of tritium per hand.
- (3) Fifteen millicuries (555 megabecquerels) of tritium per dial. If bezels are used, they are considered part of the dial.
- (4) One hundred microcuries (3.7 megabecquerels) of ~~[promethium-147]~~ *promethium-147* per watch or 200 microcuries (7.4 megabecquerels) of ~~[promethium-147]~~ *promethium-147* per other timepiece.
- (5) Twenty microcuries (740 kilobecquerels) of ~~[promethium-147]~~ *promethium-147* per watch hand or 40 microcuries (1.48 megabecquerels) of ~~[promethium-147]~~ *promethium-147* per other timepiece hand.
- (6) Sixty microcuries (2.22 megabecquerels) of ~~[promethium-147]~~ *promethium-147* per watch dial or 120 microcuries (4.44 megabecquerels) of ~~[promethium-147]~~ *promethium-147* per other timepiece dial. If bezels are used, they are considered part of the dial.
- (7) ~~[Fifteen-hundredths microcurie (5.55 kilobecquerels) of radium per timepiece.~~

~~—— (8) Three-hundredths microcurie (1.11 kilobecquerels) of radium per hand.~~

~~— (9) Nine hundredths microcurie (3.33 kilobecquerels) of radium per dial. If bezels are used, they are considered part of the dial.~~

~~— (10)]~~ Notwithstanding these quantities, the levels of radiation from hands and dials containing ~~[promethium-147]~~ *promethium-147* or ~~[radium-226]~~ *radium-226* must not exceed, when measured through 50 milligrams per square centimeter of absorber:

(I) For wrist watches, 0.1 millirad (1 microgray) per hour at 10 centimeters from any surface;

(II) For pocket watches, 0.1 millirad (1 microgray) per hour at 1 centimeter from any surface, also radium must not be used for pocket watches; and

(III) For any other timepiece, 0.2 millirad (2 micrograys) per hour at 10 centimeters from any surface.

~~[(11)]~~ (8) One microcurie (37 kilobecquerels) of ~~[radium-226]~~ *radium-226* per timepiece in *intact* timepieces ~~[acquired before February 28, 1980.]~~ *manufactured before November 30, 2010.*

(b) Lock illuminators containing not more than 15 millicuries (555 megabecquerels) of tritium or not more than 2 millicuries (74 megabecquerels) of ~~[promethium-147]~~ *promethium-147* installed in automobile locks. The levels of radiation from each lock illuminator containing ~~[promethium-147]~~ *promethium-147* must not exceed 1 millirad (10 micrograys) per hour at 1 centimeter from any surface when measured through 50 milligrams per square centimeter of absorber.

(c) Precision balances containing ~~[no]~~ *not* more than 1 millicurie (37 megabecquerels) of tritium per balance or *not more than* 0.5 millicurie (18.5 megabecquerels) of tritium per balance part ~~[ ]~~ *which were manufactured before December 17, 2007.*

(d) Automobile shift quadrants containing not more than 25 millicuries (925 megabecquerels) of tritium.

(e) Marine compasses containing not more than 750 millicuries (27.75 gigabecquerels) of tritium gas and other marine navigational instruments containing not more than 250 millicuries (9.25 gigabecquerels) of tritium gas ~~[ ]~~ *which were manufactured before December 17, 2007.*

(f) *Ionization chamber smoke detectors containing not more than 1 microcurie (μCi) of americium-241 per detector in the form of a foil and designed to protect life and property from fire.*

(g) Thermostat dials and pointers containing not more than 25 millicuries (925 megabecquerels) of tritium per thermostat.

~~[(g)]~~ (h) Electron tubes, if each tube does not contain more than one of the following specified quantities of radioactive material:

(1) One hundred fifty millicuries (5.55 gigabecquerels) of tritium per microwave receiver protector tube or 10 millicuries (370 megabecquerels) of tritium per any other electron tube;

(2) One microcurie (37 kilobecquerels) of ~~[cobalt-60;]~~ *cobalt-60;*

(3) Five microcuries (185 kilobecquerels) of ~~[nickel-63;]~~ *nickel-63;*

(4) Thirty microcuries (1.11 megabecquerels) of ~~[krypton-85;]~~ *krypton-85;*

(5) Five microcuries (185 kilobecquerels) of ~~[cesium-137;]~~ *cesium-137;*

(6) Thirty microcuries (1.11 megabecquerels) of ~~[promethium-147;]~~ *promethium-147;* or

(7) One microcurie (37 kilobecquerels) of ~~[radium-226,]~~ *radium-226,*

↪ and if the levels of radiation from each electron tube containing radioactive material do not exceed 1 millirad (10 micrograys) per hour at 1 centimeter from any surface when measured through 7 milligrams per square centimeter of absorber.

~~[(h)]~~ *(i)* Ionizing radiation measuring instruments containing, for purposes of internal calibration or standardization, a source of radioactive material ~~[not exceeding]~~ *which:*

*(1) Does not exceed* the applicable quantity in NAC 459.188 ~~[.]~~; *and*

*(2) Contains not more than 10 exempt quantities.*

2. For the purposes of NAC 459.180 to 459.313, inclusive, authority to transfer possession or control by the manufacturer, processor or producer of any equipment, device, commodity or other product containing source material or by-product material whose subsequent possession, use, transfer and disposal by all other persons are exempted from regulatory requirements may be obtained only from the Nuclear Regulatory Commission.

3. For the purposes of paragraph ~~[(g)]~~ *(h)* of subsection 1, electron tubes include spark gap tubes, power tubes, gas tubes including glow lamps, receiving tubes, microwave tubes, indicator tubes, pick-up tubes, radiation detection tubes and any other completely sealed tube that is designed to conduct or control electrical currents.

*4. For the purposes of paragraph (i) of subsection 1:*

*(a) The source of an instrument may contain either one type or different types of radionuclides;*

*(b) An individual exempt quantity may be composed of fractional parts of one or more of the exempt quantities specified in NAC 459.188; and*

*(c) Five hundredths of a microcurie of americium-241 shall be deemed an exempt quantity pursuant to NAC 459.188.*

**Sec. 55.** NAC 459.192 is hereby amended to read as follows:

459.192 1. Except for persons who manufacture, process or produce self-luminous products containing tritium, ~~[krypton-85]~~ *krypton-85* or ~~[promethium-147,]~~ *promethium-147*, any person is exempt from the provisions of NAC 459.010 to 459.950, inclusive, *and sections 2 to 45, inclusive, of this regulation* to the extent that he receives, possesses, uses, transfers, owns or acquires tritium, ~~[krypton-85]~~ *krypton-85* or ~~[promethium-147]~~ *promethium-147* in self-luminous products manufactured, processed, produced, imported or transferred in accordance with a specific license issued by the Nuclear Regulatory Commission pursuant to 10 C.F.R. § 32.22 which license authorizes the transfer of the product to persons who are exempt from regulatory requirements. The exemption in this subsection for self-luminous products does not apply to tritium, ~~[krypton-85]~~ *krypton-85* or ~~[promethium-147]~~ *promethium-147* used in products for frivolous purposes or in toys or adornments.

2. Any person is exempt from the provisions of NAC 459.010 to 459.950, inclusive, *and sections 2 to 45, inclusive, of this regulation* to the extent that he receives, possesses, uses, transfers or owns articles containing less than 0.1 microcurie (3.7 ~~[kilobecquerels]~~ *kilobecquerels*) of ~~[radium-226]~~ *radium-226* which were acquired before February 28, 1980.

3. Except for persons who manufacture, process, ~~[or]~~ produce *or initially transfer for sale or distribution* gas and aerosol detectors containing radioactive material, any person is exempt from the provisions of NAC 459.010 to 459.950, inclusive, *and sections 2 to 45, inclusive, of this regulation* to the extent that he receives, possesses, uses, transfers, owns or acquires

radioactive material in gas and aerosol detectors designed to protect life or property from fires and airborne hazards if the detectors containing radioactive material have been manufactured, ~~imported or~~ *processed, produced or initially* transferred in accordance with a specific license issued by the Division, the Nuclear Regulatory Commission or any other agreement state pursuant to 10 C.F.R. § 32.26 or its equivalent, which authorizes the *initial* transfer of the detectors ~~to persons who are exempt from regulatory requirements.~~ *for use. This exemption also applies to gas and aerosol detectors manufactured or distributed before November 30, 2010, in accordance with a specific license issued by a state under comparable provisions to 10 C.F.R. § 32.26 authorizing distribution to persons exempt from regulatory requirements.* The following also apply to gas and aerosol detectors containing radioactive material:

(a) The provisions of subsection 2 of NAC 459.190 apply to this subsection.

(b) Any gas and aerosol detector which contains by-product material, or naturally occurring and accelerator-produced radioactive material, and which was previously manufactured and distributed to general licensees in accordance with a specific license issued by an agreement state *, pursuant to provisions comparable to 10 C.F.R. § 32.26,* is exempt under this subsection if the device is labeled in accordance with the specific license and if the device meets the requirements of NAC 459.280.

4. Any person who receives, possesses, uses, transfers, owns or acquires capsules that contain carbon-14 urea is exempt from the provisions of NAC 459.180 to 459.313, inclusive, if each capsule:

(a) Is intended solely for in vivo diagnostic use in humans and is not used for research involving human subjects; and

(b) Contains, allowing for nominal variation that may occur during the manufacturing process, not more than 1 microcurie (37 kilobecquerels) of carbon-14 urea.

↪ ~~[Nothing in]~~ *The provisions of* this subsection ~~[relieves]~~ *do not relieve* a person from complying with any other federal, state or local requirement governing the receipt, administration or use of drugs.

~~[5.— Any person who receives, possesses, uses, transfers, owns or acquires synthetic plastic resins containing scandium-46 which are designed for sand consolidation in oil wells is exempt from the provisions of NAC 459.010 to 459.950, inclusive, if the resins have been manufactured or imported in accordance with a specific license issued by the Nuclear Regulatory Commission or have been manufactured in accordance with the specifications contained in a specific license issued by the Division or any agreement state to the manufacturer of resins pursuant to licensing requirements equivalent to those in 10 C.F.R. §§ 32.16 and 32.17 of the regulations of the Nuclear Regulatory Commission. This exemption does not authorize the manufacture of any resins containing scandium-46.]~~

**Sec. 56.** NAC 459.1951 is hereby amended to read as follows:

459.1951 *1.* The following table sets forth quantities of radioisotopes for the purposes of subsections 1 and 2 of NAC 459.195.

Radioactive material	Release fraction	Quantity (curies)	Radioactive material	Release fraction	Quantity (curies)
Actinium-228	0.001	4,000	Barium-133	.01	10,000
Americium-241	.001	2	Barium-140	.01	30,000
Americium-242	.001	2	Bismuth-207	.01	5,000
Americium-243	.001	2	Bismuth-210	.01	600
Antimony-124	.01	4,000	Cadmium-109	.01	1,000
Antimony-126	.01	6,000	Cadmium-113	.01	80



Radioactive material	Release fraction	Quantity (curies)
Calcium-45	.01	20,000
Californium-252	.001	9(20mg)
Carbon-14	.01	50,000
<i>Non CO<sub>2</sub></i>	<del>[Non CO<sub>2</sub>]</del>	
Cerium-141	.01	10,000
Cerium-144	.01	300
Cesium-134	.01	2,000
Cesium-137	.01	3,000
Chlorine-36	.5	100
Chromium-51	.01	300,000
Cobalt-60	.001	5,000
Copper-64	.01	200,000
Curium-242	.001	60
Curium-243	.001	3
Curium-244	.001	4
Curium-245	.001	2
Europium-152	.01	500
Europium-154	.01	400
Europium-155	.01	3,000
Germanium-68	.01	2,000
Gadolinium-153	.01	5,000
Gold-198	.01	30,000
Hafnium-172	.01	400
Hafnium-181	.01	7,000
Holmium-166m	.01	100
Hydrogen-3	.5	20,000
Iodine-125	.5	10
Iodine-131	.5	10
Indium-114m	.01	1,000
Iridium-192	.001	40,000
Iron-55	.01	40,000
Iron-59	.01	7,000
Krypton-85	1.0	6,000,000
Lead-210	.01	8
Manganese-56	.01	60,000
Mercury-203	.01	10,000
Molybdenum-99	.01	30,000
Neptunium-237	.001	2
Nickel-63	.01	20,000
Niobium-94	.01	300
Phosphorus-32	.5	100
Phosphorus-33	.5	1,000
Polonium-210	.01	10
Potassium-42	.01	9,000
Promethium-145	.01	4,000
Promethium-147	.01	4,000
<i>Radium-226</i>	<i>.001</i>	<i>100</i>
Ruthenium-106	.01	200
Samarium-151	.01	4,000
Scandium-46	.01	3,000
Selenium-75	.01	10,000
Silver-110m	.01	1,000
Sodium-22	.01	9,000
Sodium-24	.01	10,000
Strontium-89	.01	3,000
Strontium-90	.01	90
Sulfur-35	.5	900
Technetium-99	.01	10,000
Technetium-99m	.01	400,000
Tellurium-127m	.01	5,000
Tellurium-129m	.01	5,000

Radioactive material	Release fraction	Quantity (curies)
Terbium-160	.01	4,000
Thulium-170	.01	4,000
Tin-113	.01	10,000
Tin-123	.01	3,000
Tin-126	.01	1,000
Titanium-44	.01	100
Vanadium-48	.01	7,000
Xenon-133	1.00	900,000
Yttrium-91	.01	2,000
Zinc-65	.01	5,000
Zirconium-93	.01	400
Zirconium-95	.01	5,000
Any other beta-gamma emitter	.01	10,000
Mixed fission products	.01	1,000
Mixed corrosion products	.01	10,000
Contaminated equipment beta-gamma	.001	10,000
Irradiated material, any form other than solid noncombustible	.01	1,000
Irradiated material, solid noncombustible	.001	10,000
Mixed radioactive waste, beta-gamma	.01	1,000
Packaged mixed waste, beta-gamma	.001	10,000
Any other alpha emitter	.001	2
Contaminated equipment, alpha	.0001	20
Packaged waste, alpha	.0001	20

*2. For combinations of radioactive materials, consideration of the need for an emergency plan pursuant to NAC 459.195 is required if the sum of the ratios of the quantity of each radioactive material authorized to the quantity listed for that material in Schedule C exceeds 1.*

*3. Waste packaged in Type B containers does not require an emergency plan pursuant to NAC 459.195.*

**Sec. 57.** NAC 459.1955 is hereby amended to read as follows:

459.1955 1. A plan for financing decommissioning, as described in subsection 10, must be submitted by each applicant for a license authorizing the possession and use of:

(a) Unsealed radioactive materials with a half-life of more than 120 days in quantities that exceed  $10^5$  times the applicable quantities set forth in NAC 459.362; or

(b) The involvement of a combination of radionuclides when R divided by  $10^5$  is greater than 1.

2. A plan for financing decommissioning, as described in subsection 10, must be submitted by each licensee who is authorized to possess and use, and each applicant for a specific license authorizing the possession and use of:

(a) Sealed sources of radioactive material or plated foils of radioactive material with a half-life of more than 120 days in quantities that exceed  $10^{12}$  times the applicable quantities set forth in NAC 459.362; or

(b) The involvement of a combination of isotopes when R divided by  $10^{12}$  is greater than 1.

3. Each applicant for a specific license that authorizes the possession and use of radioactive material with a half-life of more than 120 days and in the quantities set forth in subsection 9 must submit:

(a) A plan for financing decommissioning as described in subsection 10; or

(b) A certification which sets forth that financial assurance for decommissioning:

(1) Has been provided in the amount required by subsection 9 using one of the methods set forth in subsection 11; or

(2) Will be provided after the application has been approved and the license issued, but before the receipt of any licensed material by the licensee.

4. If an applicant:

(a) Defers the execution of the financial instrument until after the license has been issued pursuant to subparagraph (2) of paragraph (b) of subsection 3, the applicant must submit to the Division as part of the certification a signed original of the financial instrument used to comply with subsection 11 before the receipt of any licensed material.

(b) Does not defer the execution of the financial instrument until after the license has been issued, the applicant must submit to the Division as part of the certification a signed original of the financial instrument used by the applicant to comply with subsection 11.

5. An applicant for a specific license of the type described in subsection 1 or 3 must submit a plan for financing decommissioning or a certification of financial assurance for decommissioning with his application.

6. The holder of a specific license that is issued before January 26, 1999, and:

(a) Of a type described in subsection 1, shall submit a plan for financing decommissioning or a certification of financial assurance for decommissioning in an amount not less than \$1,125,000. If a certification of financial assurance is submitted, the licensee shall include a plan for financing decommissioning in an application for renewal of the license.

(b) Of a type described in subsection 3 shall submit a plan for financing decommissioning or a certification of financial assurance for decommissioning.

7. A licensee who has submitted an application for renewal of his license before January 26, 1999, in accordance with NAC 459.202, shall:

(a) Provide financial assurance for decommissioning in accordance with subsections 1 and 3; and

(b) Submit a plan for financing decommissioning.

8. Waste collectors and waste processors, as defined in Appendix G, shall:

(a) Provide financial assurance for decommissioning in an amount based on a plan for financing decommissioning as described in subsection 10; and

(b) Submit a plan for financing decommissioning which must include, without limitation:

(1) The cost of disposal of the maximum amount, measured in curies, of radioactive material permitted by the license;

(2) The cost of disposal of the maximum quantity, measured by volume, of radioactive material which could be present at the licensee's facility at any time; and

(3) The cost to remediate the licensee's site to meet the license termination criteria set forth in NAC 459.200.

9. Financial assurance for decommissioning must be provided in accordance with the following amounts:

(a) Not less than \$1,125,000 is required if:

(1) The amount of radioactive material is greater than  $10^4$ , but less than or equal to  $10^5$  times the applicable quantities described in NAC 459.362, in unsealed form; or

(2) R, for a combination of radionuclides, divided by  $10^4$  is greater than 1 but R divided by  $10^5$  is less than or equal to 1.

(b) Not less than \$225,000 is required if:

(1) The amount of radioactive material is greater than  $10^3$ , but less than or equal to  $10^4$  times the applicable quantities described in NAC 459.362, in unsealed form; or

(2) R, for a combination of radionuclides, divided by  $10^3$  is greater than 1 but R divided by  $10^4$  is less than or equal to 1.

(c) Not less than \$113,000 is required if:

(1) The amount of radioactive material is greater than  $10^{10}$  times the applicable quantities described in NAC 459.362, in sealed sources or plated foils; or

(2) R, for a combination of radionuclides, divided by  $10^{10}$  is greater than 1.

10. The plan for financing decommissioning must contain the following:

(a) An estimate of the costs of decommissioning the facility based on the decommissioning plan;

(b) A description of the method of assuring financing for decommissioning in compliance with subsection 11;

(c) A schedule for adjusting the estimate of costs, which estimates of costs must be adjusted at least every 3 years, and associated levels of funding periodically over the life of the facility; and

(d) A certification by the licensee that financial assurance for decommissioning has been provided in the amount of the cost estimate for decommissioning and a signed original of the financial instrument used to satisfy the requirements of subsection 11.

11. Financial assurance for decommissioning must be provided by one or more of the following methods:

(a) Prepayment in the form of a deposit of an amount of money in cash or liquid assets that would be sufficient to pay the costs of decommissioning before starting operations at the facility into an account segregated from the assets of the licensee and outside the administrative control of the licensee. Prepayment may be in the form of a trust, escrow account, government fund, certificate of deposit or deposit of government securities.

(b) Provision of a surety that assures that the costs of decommissioning will be paid should the licensee fail to do so. A guarantee of money from a parent company of the licensee for the cost of decommissioning that is based on a financial test may be used if the guarantee and test meet the criteria set forth in subsection 14. Such a guarantee may not be used in combination with any other method of financing to satisfy the requirements of this subsection. A guarantee of money by the applicant or licensee for the cost of decommissioning that is based on a financial test may be used if the guarantee and test meet the criteria set forth in subsection 14. Such a guarantee must not be used in combination with any other method of financing to satisfy the requirements of this subsection or if the applicant or licensee has a parent company that holds a majority control of the voting stock of the applicant or licensee. Any surety used to provide financial assurance for decommissioning must contain the following conditions:

(1) The surety must be open-ended or, if written for a specified term, must be renewed automatically unless 90 days or more before the renewal date the issuer notifies the Division, the beneficiary and the licensee of his intention not to renew. The surety must provide that the full-face amount will be paid to the beneficiary automatically before the expiration without proof of

forfeiture if the licensee fails to provide a replacement acceptable to the Division within 30 days after receipt of notification of the cancellation.

(2) The surety must be payable to a trust established for the costs of decommissioning the facility. The trustee and trust must be approved by the Division. The Division will approve as a trustee an appropriate agency of the State or Federal Government or an entity which has the authority to act as a trustee and whose trust operations are regulated and examined by an agency of the State or Federal Government.

↪ A licensee shall maintain the surety in effect until the Division has terminated his license.

(c) Provision of an external sinking fund in which deposits are made at least annually, coupled with a surety issued in compliance with the provisions of paragraph (b) except that the value of the surety may decrease by the amount being accumulated in the external sinking fund.

(d) If the licensee is a federal, state or local governmental agency, a statement of intent containing an estimate of the costs of decommissioning or an amount required by subsection 9 and an indication that money for decommissioning will be obtained when necessary.

12. A person licensed pursuant to NAC 459.180 to 459.313, inclusive, shall maintain the following records in an identified location until the site is released for unrestricted use:

(a) Records of spills or other unusual occurrences involving the spread of contamination in and around the facility, equipment or site. Such records must include, without limitation, the name, quantity, form and concentration of a nuclide involved in the spill or unusual occurrence.

(b) Drawings and other documents relating to:

(1) The modification of structures and equipment in restricted areas where radioactive materials are used and stored; and

(2) Locations where it is possible that contamination which is inaccessible has occurred, including, without limitation, areas of seepage into concrete and other porous materials.

(c) A list of all the areas:

- (1) Designated and formerly designated as restricted areas;
- (2) Outside of restricted areas that require documentation pursuant to paragraph (a);
- (3) Outside of restricted areas where waste has been buried; and
- (4) Outside of restricted areas which contain material that, if the license expired, the licensee would be required to decontaminate the area to unrestricted release levels or apply for approval for disposal pursuant to NAC 459.3595.

*(d) Except for areas containing only sealed sources which have not leaked or where no contamination remains after any leak, or for by-product material having only a half-life of less than 65 days, a list contained in a single document and updated every 2 years which sets forth the following:*

*(1) All areas designated or formerly designated as restricted areas as defined in 10 C.F.R. § 20.1003, or for requirements before January 1, 1994, 10 C.F.R. § 20.3 as contained in the C.F.R. edition revised as of January 1, 1993;*

*(2) All areas outside of restricted areas that require documentation pursuant to paragraph (a);*

*(3) All areas outside of restricted areas where current and previous wastes have been buried as documented pursuant to 10 C.F.R. § 20.2108; and*

*(4) All areas outside of restricted areas that contain material such that, if the license expired, the licensee would be required to either decontaminate the area to meet the criteria*



*for decommissioning set forth in 10 C.F.R. Part 20, Subpart E, or apply for approval for disposal under 10 C.F.R. § 20.2002.*

↪ If records important to the decommissioning of a facility are kept for other purposes, reference to these records and their locations may be used.

13. Before licensed activities are transferred or assigned pursuant to subsection 2 of NAC 459.198, the licensee must transfer all the records described in paragraphs (a), (b) , ~~(c)~~ *and (d)* of subsection 12 to the licensee to whom the activities have been transferred or assigned. Such records become, upon receipt, the responsibility of the licensee to whom the activities have been transferred or assigned and must be retained by that licensee until its license is terminated.

14. To pass the financial test referred to in subsection 11:

(a) A parent company must have:

(1) Two of the following three ratios:

(I) A ratio of total liabilities to net worth that is less than 2;

(II) A ratio of the sum of net income plus depreciation, depletion and amortization to total liabilities that is more than 0.1; and

(III) A ratio of current assets to current liabilities that is more than 1.5;

(2) Net working capital and tangible net worth that are each at least six times the current cost estimates for decommissioning or, if certification is used, the amount set forth in subsection 9; and

(3) Assets located in the United States that amount to at least 90 percent of the total assets of the parent company or at least six times the cost estimate for decommissioning or, if certification is used, the amount set forth in subsection 9; or

(b) A parent company must have:

(1) A rating for its most recent bond issuance of AAA, AA, A or BBB as issued by Standard and Poor's Ratings Services or a rating of Aaa, Aa, A or Baa as issued by Moody's Investors Service, Inc.;

(2) Tangible net worth of at least six times the current cost estimate for decommissioning, or, if a certification is used, the amount set forth in subsection 9; and

(3) Assets located in the United States that amount to at least 90 percent of the total assets of the parent company or at least six times the cost estimate for decommissioning.

15. The terms of a guarantee of a parent company must provide that:

(a) The guarantee will remain in force unless the guarantor sends notice of cancellation by certified mail to the licensee and the Division. The guarantee may not be cancelled until 120 days after the date the notice of cancellation is received by both the licensee and the Division, as evidenced by the return receipts.

(b) If the licensee fails to provide alternate financial assurance as specified in this section within 90 days after receipt by the licensee and the Division of a notice of cancellation of the guarantee from the guarantor, the guarantor must provide such alternate financial assurance in the name of the licensee.

(c) The guarantee and financial test provisions set forth in subsection 14 must remain in effect until the Division has terminated the license.

(d) If a trust is established for the costs of decommissioning, the trustee and trust must be acceptable to the Division. An acceptable trustee includes an appropriate state or federal agency

or an entity that has the authority to act as a trustee and whose trust operations are regulated and examined by a federal or state agency.

16. A licensee who guarantees the costs of decommissioning must have:

(a) A tangible net worth of at least 10 times the total estimated cost of decommissioning or the current amount required for decommissioning;

(b) Assets located in the United States that amount to at least 90 percent of its total assets or at least 10 times the cost estimate for decommissioning;

(c) A rating for its most recent bond issuance of AAA, AA or A as issued by Standard and Poor's Ratings Service or a rating of Aaa, Aa or A as issued by Moody's Investors Services, Inc.; and

(d) At least one class of equity securities registered pursuant to the Securities Exchange Act of 1934.

17. A licensee shall ensure that a certified public accountant who is independent of the licensee compares the data used to satisfy the financial test as set forth in subsections 14 and 16. The data must be derived from audited, year-end financial statements for the last fiscal year. A licensee shall inform the Division within 90 days after matters which cause the certified public accountant to believe that the data used to satisfy the financial test should be adjusted and that the licensee or parent company, as applicable, can no longer pass the test. After the initial financial test, the licensee or parent company, as applicable, shall repeat the test within 90 days after the close of each fiscal year. If the parent company can no longer pass the test, the licensee shall notify the Division of its intent to establish alternate financial assurance as specified in this section. The notice must be sent by certified mail within 90 days after the close of the fiscal year.

The licensee shall provide alternate financial assurance within 120 days after the close of such fiscal year.

18. If a bond issuance of the licensee or parent company, as applicable, ceases to be rated in a category of A or above by either Standard and Poor's Ratings Services or Moody's Investors Service, Inc., the licensee shall notify the Division in writing within 20 days after the rating. If the bond issuance ceases to be rated in a category of A or above by both Standard and Poor's Ratings Services and Moody's Investors Service, Inc., the licensee or parent company, as applicable, no longer meets the financial test as set forth in subsection 14.

19. The licensee shall provide to the Division a written guarantee or commitment by a corporate officer which provides that the licensee will fund and complete the decommissioning of the facility or, upon issuance of an order by the State Board of Health, the licensee shall establish a trust in the amount of the current cost estimates for decommissioning.

20. As used in this section:

(a) "External sinking fund" means a fund established and maintained by depositing money periodically in an account segregated from the licensee's assets and outside the licensee's administrative control in which the total amount of money to be accumulated before the termination of the operation is expected is sufficient to pay the costs of decommissioning. The term includes, without limitation, a trust, escrow account, government fund, certificate of deposit or deposit of government securities.

(b) "R" equals the sum of the ratios of the quantity of each radionuclide to the applicable value as set forth in NAC 459.362.

(c) “Surety” includes, without limitation, a trust fund, surety bond, letter of credit, line of credit, insurance, guarantee of performance or, except as otherwise provided in this section, any combination thereof.

**Sec. 58.** NAC 459.198 is hereby amended to read as follows:

459.198 1. Each license issued pursuant to NAC 459.180 to 459.950, inclusive, *and sections 20 to 45, inclusive, of this regulation* is subject to all the provisions of chapter 459 of NRS, now or hereafter in effect, and to all regulations and orders of the Division.

2. No license issued or granted under NAC 459.180 to 459.950, inclusive, *and sections 20 to 45, inclusive, of this regulation* or right to possess or utilize radioactive material granted by any license issued pursuant to those provisions, may be transferred, assigned or in any manner disposed of, either voluntarily or involuntarily, directly or indirectly, through transfer of control of any license to any person unless the Division, after securing full information, finds that the transfer is in accordance with the provisions of chapter 459 of NRS and gives its consent in writing.

3. Each person licensed by the Division pursuant to NAC 459.180 to 459.950, inclusive, *and sections 20 to 45, inclusive, of this regulation* or each person seeking a license, shall:

(a) Confine his use and possession of the material licensed to the locations and purposes authorized in the license.

(b) Inform the Division in writing before the sale or lease of his business if the transaction involves the transfer of a source of radiation to another person.

(c) Inform the Division, in writing, immediately following the filing of a voluntary or involuntary petition for bankruptcy under Title 11 of the United States Code or the appropriate chapter of NRS by or against:

- (1) The licensee;
- (2) An entity, as that term is defined in 11 U.S.C. § 101(15), which controls the licensee or which lists the licensee as a property of the estate of the entity; or
- (3) An affiliate, as that term is defined in 11 U.S.C. § 101(2), of the licensee.

(d) Keep records of information important to the safe and effective decommissioning of the facility where the radioactive material is located in a location identified to the Division until the license is terminated by the Division. If records of information relevant to decommissioning are kept for other purposes, references to ~~these~~ *those* records and their locations may be used. Such information must include:

(1) Records of spills or other unusual occurrences involving the spread of contamination in or around the facility, the equipment of the facility or the site of the facility. ~~These~~ *The* records may be limited to instances when contamination remains after any cleanup procedures or when there is a reasonable likelihood that contaminants may have spread to inaccessible areas , including possible seepage into porous materials such as concrete. ~~These~~ *The* records must include any information known to the licensee on the identification of nuclides, quantities, forms and concentrations involved.

(2) Any available drawings of structures and equipment of the facility, as originally built and as modified, which are located in restricted areas where radioactive materials are used or stored, and of locations of inaccessible areas to which contaminants may spread, such as buried

pipes which may be subject to contamination. If drawings are not available, the licensee shall provide to the Division other appropriate records of information concerning these areas.

(3) Records of any performance of an estimate of the costs of decommissioning for incorporation in a plan for financing the decommissioning and any records of the method used for assuring the availability of money for the costs of decommissioning the facility.

4. Each person licensed by the Division pursuant to NAC 459.180 to 459.950, inclusive, *and sections 20 to 45, inclusive, of this regulation* who uses a portable gauge shall use a minimum of two independent physical controls that form tangible barriers to secure the portable gauge from unauthorized removal when the portable gauge is not under the control and constant surveillance of the licensee.

*5. Each person licensed by the Division pursuant to NAC 459.180 to 459.950, inclusive, and sections 20 to 45, inclusive, of this regulation who prepares technetium-99m radiopharmaceuticals from molybdenum-99 and technetium-99m generators or who prepares rubidium-82 from strontium-82 and rubidium-82 generators shall:*

*(a) Test the generator eluates for molybdenum-99 breakthrough or contamination by strontium-82 and strontium-85, respectively, pursuant to 10 C.F.R. § 35.204; and*

*(b) Record the results of each test and retain each record for at least 3 years after the record is made.*

6. *Each licensee authorized pursuant to NAC 459.236 to produce positron emission tomography radioactive drugs for noncommercial distribution to medical use licensees in its consortium shall:*

*(a) Satisfy the labeling requirements in paragraph (d) of subsection 1 of NAC 459.300 for each positron emission tomography radioactive drug, transport radiation shield and each syringe, vial or other container used to hold the positron emission tomography radioactive drug;*

*(b) Possess and use instrumentation to measure the radioactivity of the positron emission tomography radioactive drug and meet the procedures, radioactivity measurement, instrument test, instrument check and instrument adjustment requirements pursuant to subsection 3 of NAC 459.300;*

*(c) If the licensee is a pharmacy, ensure that any person who prepares positron emission tomography radioactive drugs:*

*(1) Is an authorized nuclear pharmacist who meets the requirements of paragraph (b) of subsection 2 of NAC 459.300; or*

*(2) Is under the supervision of an authorized nuclear pharmacist pursuant to 10 C.F.R. § 35.27; and*

*(d) If the licensee is a pharmacy that allows a person to work as an authorized nuclear pharmacist, it shall meet the requirements of paragraph (d) of subsection 2 of NAC 459.300.*

*↪ Any authorization obtained pursuant to NAC 459.236 to produce positron emission tomography radioactive drugs for noncommercial distribution to medical use licensees in a consortium does not relieve the licensee from the requirement to comply with any applicable regulations of the United States Food and Drug Administration, or other federal and state laws or regulations governing radioactive drugs.*

**Sec. 59.** NAC 459.200 is hereby amended to read as follows:



459.200 1. Except as otherwise provided in subsections 2, 3 and ~~3.1~~ 4, a specific license expires at the end of the day on the date of expiration set forth on the license.

2. A specific license for which a licensee has, not less than 30 days before the date of expiration set forth on the license, filed an application for renewal pursuant to NAC 459.202 remains effective until the Division makes a final decision on the application ~~4~~, *and the license application will be considered timely*. If the decision is to deny the application for renewal, the license expires on the date of the decision or, if the Division specifies a date of expiration in the decision to deny the application for renewal, on the date specified.

3. *If the renewal application for a specific license is not received at least 30 days before the date of expiration set forth on the license, the licensee shall:*

*(a) Pay an expedited review fee of twice the annual fee set forth in NAC 459.310, which, upon submittal, grants the licensee an administrative authorization for the license to remain effective until the Division makes an expedited decision on the application;*

*(b) Stop all operations involving radioactive materials and place all sources of radiation in storage until they can be transferred to persons authorized to receive them; or*

*(c) Stop all operations on the expiration date of the license until the Division makes a decision on the application or issues a renewed license.*

4. A specific license revoked by the Division expires on the date of the decision of the Division to revoke the license or on the date specified in the decision of the Division to revoke the license.

~~[4.]~~ 5. A specific license continues in effect with respect to the possession of radioactive material until the Division notifies the licensee in writing that the license is terminated. During the time the specific license continues in effect, the licensee shall:

- (a) Limit actions involving radioactive material to those related to decommissioning; and
- (b) Continue to control entry to restricted areas until they are suitable for release so that there is no undue hazard to public health and safety.

~~[5.]~~ 6. Except as otherwise provided in subsection ~~[7.]~~ 8, a licensee shall notify the Division in writing within 60 days before:

- (a) The decision of the licensee to cease permanently its principal activities at the entire site or in a separate building or outdoor area that contains residual radioactivity if the building or outdoor area is unsuitable for release because of an undue hazard to public health and safety;
- (b) The end of a 24-month period in which no principal activities have been conducted pursuant to the license; or
- (c) The end of a 24-month period in which no principal activities have been conducted in a separate building or outdoor area that contains residual radioactivity and the building or outdoor area is unsuitable for release because of an undue hazard to public health and safety.

~~[6.]~~ 7. Coincident with the notification required by subsection ~~[5.]~~ 6, the licensee shall maintain in effect all financial assurances for decommissioning established by the licensee pursuant to NAC 459.1955 in conjunction with the issuance or renewal of a license as required by this section. The amount of the financial assurance must be increased, or may be decreased, as appropriate, to meet the detailed cost estimate for decommissioning. After the Division approves the plan for decommissioning, a licensee may reduce the amount of the financial assurance as

decommissioning proceeds and radiological contamination is reduced at the site with the approval of the Division.

~~{7-}~~ 8. The Division may grant a request to extend the period during which notification is required pursuant to subsection ~~{5-}~~ 6 if the Division determines that such an extension is not detrimental to the public health and safety and is otherwise in the public interest. The request must be submitted not later than 30 days before notification is required pursuant to subsection ~~{5-}~~ 6. The schedule for decommissioning may not commence until the Division has made a determination on the request.

~~{8-}~~ 9. A plan for decommissioning must be submitted to the Division by the licensee if it is required by a condition of the license or if the procedures for decommissioning have not been approved by the Division and these procedures could increase the potential impacts on the health and safety of workers or the public, including, without limitation, if:

- (a) The procedures involve techniques not applied routinely during cleanup or maintenance operations;
- (b) The workers would be entering areas not normally occupied where surface contamination and radiation levels are significantly higher than routinely encountered during normal operations;
- (c) The procedures could result in a significantly greater airborne concentration of radioactive materials than is present during normal operations; or
- (d) The procedures could result in a significantly greater release of radioactive material to the environment than that associated with normal operations.

➡ Such procedures may not be carried out by the licensee without being approved by the Division before they commence.

~~{9,}~~ 10. A proposed plan for decommissioning will be approved by the Division if decommissioning will be completed as soon as practical, the health and safety of the workers and the public will be protected and the proposed plan for decommissioning includes:

- (a) A description of the conditions of the site, separate building or outdoor area sufficient to evaluate the acceptability of the plan;
- (b) A description of the decommissioning activities;
- (c) A description of the methods that will be used to ensure the protection of workers and the environment against radiation hazards during decommissioning;
- (d) A description of the planned final radiation survey;
- (e) An updated and detailed cost estimate for decommissioning, comparison of that estimate with the money set aside for decommissioning and a plan for ensuring the availability of adequate money for completion of decommissioning; and
- (f) For a plan for decommissioning in which completion of decommissioning will be later than 24 months after approval of the plan, a justification for the delay based on the criteria set forth in subsection ~~{12,}~~ 13.

~~{10,}~~ 11. A licensee shall begin decommissioning of the site within 60 days after the plan for decommissioning is approved by the Division.

~~{11,}~~ 12. Except as otherwise provided in subsection ~~{12,}~~ 13, a licensee:

- (a) Shall complete decommissioning of the site, separate building or outdoor area as soon as practicable, but not later than 24 months after decommissioning begins.
- (b) Must, if decommissioning involves an entire site, request termination of the license as soon as practicable, but not later than 24 months after decommissioning begins.

~~12.~~ 13. The Division may approve a request by the licensee for an extension of the period allowed for decommissioning or termination of a license if the Division determines that such an extension is necessary because:

- (a) It is not technically feasible to complete decommissioning within 24 months;
- (b) There is not sufficient capacity for waste disposal to allow completion of decommissioning within 24 months;
- (c) A significant reduction in the volume of wastes requiring disposal will be achieved by allowing short-lived radionuclides to decay;
- (d) A significant reduction in radiation exposure to workers can be achieved by allowing short-lived radionuclides to decay; or
- (e) There are other site-specific factors that make decommissioning within 24 months undesirable or unfeasible, including, without limitation, the regulatory requirements of other government agencies, lawsuits, activities involving the treatment of groundwater, monitored restoration of natural groundwater, actions that could result in more environmental harm than deferred cleanup and other factors beyond the control of the licensee.

~~13.~~ 14. As the final step in decommissioning, the licensee shall certify the disposition of all licensed material, including, without limitation, accumulated wastes, by submitting to the Division a completed NRC Form 314 or information that is equivalent to that contained in the completed form and:

- (a) Demonstrate that the premises where the licensed activities were carried out satisfy the criteria for decommissioning set forth in NAC 459.316 to 459.3184, inclusive; or

(b) Conduct a radiation survey of the premises and submit to the Division a report of the results of this survey. The radiation survey must demonstrate that the premises are suitable for release and include:

(1) A description of the levels of gamma radiation in units of millirem (millisievert) per hour at 1 meter from surfaces;

(2) A description of the levels of radioactivity, including, without limitation, alpha and beta radiation, in units of:

(I) Microcuries (megabecquerels) per 100 square centimeters, removable and fixed, for surfaces;

(II) Microcuries (megabecquerels) per milliliter for water; and

(III) Picocuries (becquerels) per gram for solids, including, without limitation, soils and concrete; and

(3) A description of the survey instruments used and a statement that each instrument was properly calibrated and tested. The statement must be certified by the person who calibrated and tested the instrument.

~~14.1~~ 15. A specific license, including an expired license, will be terminated by written notice to the licensee that the Division has determined that:

(a) All radioactive material has been disposed of properly;

(b) Reasonable effort has been made by the licensee to eliminate residual radioactive contamination, if present;

(c) All records required to be maintained pursuant to subsection 12 of NAC 459.1955 have been received by the Division; and

(d) The radiation survey performed by the licensee or other information submitted by the licensee demonstrates that the premises are suitable for release in accordance with the criteria for decommissioning set forth in NAC 459.316 to 459.3184, inclusive.

**Sec. 60.** NAC 459.210 is hereby amended to read as follows:

459.210 1. Subject to the provisions of NAC 459.010 to 459.950, inclusive, *and sections 2 to 45, inclusive, of this regulation*, a person who holds a specific license from the Nuclear Regulatory Commission or an agreement state 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 hereby granted a general license to conduct within this State the activities authorized in the specific license for a period not in excess of 180 days in any calendar year provided that:

(a) The specific license does not limit the activity authorized by the specific license to specified installations or locations.

(b) The out-of-state licensee notifies the Division in writing at least 3 business days before engaging in the proposed activity and receives written permission from the Division to proceed with the proposed activity. The notification must indicate the location, period and type of proposed possession and use within the State, and must be accompanied by a copy of the specific license. If, for a specific case, the 3-day period would impose an undue hardship on the out-of-state licensee, he may apply to the Division and obtain written permission to proceed sooner. The Division may waive the requirement for filing additional written notifications during the remainder of the calendar year following the receipt of the initial notification from a person engaging in activities under the general license.

(c) The out-of-state licensee complies with all applicable regulations of the Division and with all the terms and conditions of his specific license, except any terms and conditions which may be inconsistent with applicable regulations of the Division.

(d) The out-of-state licensee supplies such other information as the Division may request.

(e) The out-of-state licensee shall not transfer or dispose of radioactive material possessed or used under the general license provided in this section except by transfer to a person:

(1) Specifically licensed by the Division or by the Nuclear Regulatory Commission to receive such material; or

(2) Exempt from the requirements for a license for such material pursuant to NAC 459.184.

2. A licensee must determine the jurisdiction of a temporary job site at a federal facility before radioactive materials may be used at the temporary job site. If the jurisdiction is unknown, the licensee must contact the federal agency to determine whether the job site is under exclusive federal jurisdiction. The jurisdiction of the job site must be obtained in writing from the federal agency, or the name and title of the person at the federal agency who provided the determination must be recorded along with the date of the determination.

3. Before a licensee may use radioactive material at a temporary job site in another state or at a federal facility, the licensee must obtain authorization, if the job site is:

(a) In another state, from:

(1) That state, if that state is an agreement state; or



(2) The Nuclear Regulatory Commission, by filing for reciprocity or a specific license, if the state is not an agreement state or the job site is within an area of exclusive federal jurisdiction.

(b) At a federal facility, from the Nuclear Regulatory Commission by:

(1) Filing an NRC Form 241 in accordance with 10 C.F.R. § 150.20(b), as those provisions existed on ~~January 26, 1999;~~ *December 17, 2007;* or

(2) Filing for a specific license.

4. Any person who holds a specific license issued by the Nuclear Regulatory Commission or an agreement state authorizing the holder to manufacture, transfer, install or maintain a device described in NAC 459.216 within areas subject to the jurisdiction of the licensing body is hereby granted a general license to install, transfer, demonstrate or maintain such a device in this State provided that:

(a) The person shall file a report with the Division within 30 days after the end of each calendar quarter in which any such device is transferred to or installed in this State. Each such report must identify each general licensee to whom the device is transferred by name and address, the type of device transferred and the quantity and type of radioactive material contained in the device;

(b) The device has been manufactured, labeled, installed and maintained in accordance with applicable provisions of the specific license issued to the person by the Nuclear Regulatory Commission or an agreement state;

(c) The person must ensure that any labels required to be affixed to the device under regulations of the authority which licensed manufacture of the device bear a statement that: “Removal of this label is prohibited”; and

(d) The holder of the specific license must furnish to each general licensee to whom he transfers the device or on whose premises he installs such device a copy of the general license contained in NAC 459.216.

5. The Division may withdraw, limit or qualify its acceptance of any specific license or equivalent licensing document issued by another agency, or any product distributed pursuant to the licensing document, upon determining that such action is necessary in order to prevent undue hazard to public health and safety or property.

**Sec. 61.** NAC 459.214 is hereby amended to read as follows:

459.214 1. A general license is issued to transfer, receive, acquire, own, possess and use radioactive material incorporated in the following devices or equipment which have been manufactured, tested and labeled by the manufacturer in accordance with a specific license issued to the manufacturer by the Nuclear Regulatory Commission for use pursuant to 10 C.F.R. § 31.3. This general license is subject to the provisions of NAC 459.124 to 459.134, inclusive, subsection ~~[2]~~ 3 of NAC 459.184, NAC 459.198, 459.208, 459.312 and 459.320 to 459.374, inclusive, relating to the labeling of containers, and NAC 459.780 to 459.794, inclusive.

2. The devices included in this license are:

(a) Devices designed for use as static eliminators which contain, as a sealed source or sources, radioactive material consisting of a total of not more than 500 microcuries of ~~[polonium~~ ~~210]~~ *polonium-210* per device; and

(b) Devices designed for ionization of air which contain, as a sealed source or sources, radioactive material consisting of a total of not more than 500 microcuries of ~~[polonium-210]~~ *polonium-210* per device or a total of not more than 50 millicuries of ~~[hydrogen-3]~~ *hydrogen-3* (tritium) per device.

**Sec. 62.** NAC 459.216 is hereby amended to read as follows:

459.216 1. A general license is issued to commercial and industrial firms, to research, educational and medical institutions, to a person engaged in the conduct of his own business, and to the state and local governments, including the agencies of either, to own, receive, acquire, possess, use or transfer, in accordance with the provisions of subsections 2 and 3 and NAC 459.218, radioactive material, excluding special nuclear material, contained in devices designed and manufactured for the purpose of detecting, measuring, gauging or controlling thickness, density, level, interface location, radiation, leakage or qualitative or quantitative chemical composition or for producing light or an ionized atmosphere.

2. The general license in subsection 1 applies only to radioactive material contained in devices which have been manufactured or initially transferred and labeled in accordance with the specifications contained in a specific license issued by the Division pursuant to NAC 459.282, or in accordance with the specifications contained in a specific license issued by the Nuclear Regulatory Commission or an agreement state ~~[ ]~~ *or contained in an equivalent specific license issued by a state with provisions comparable to 10 C.F.R. § 32.51.*

3. A general licensee may receive a device described in this section only from a specific licensee described in subsection 2 or through a transfer made pursuant to subsection ~~8~~ 9 of NAC 459.218 and 459.2185.

4. The general license provided in subsection 1 is subject to the provisions of NAC 459.124 to 459.134, inclusive, 459.198, 459.208, 459.2185, 459.219, 459.287, 459.289, 459.2895, 459.3062, ~~[to 459.3068, inclusive,]~~ 459.3075, 459.312 and 459.313.

*5. The general license provided in subsection 1 does not authorize the manufacture or import of devices containing radioactive material.*

**Sec. 63.** NAC 459.218 is hereby amended to read as follows:

459.218 Any person who owns, receives, acquires, possesses, uses or transfers radioactive material in a device pursuant to the general license *specified* in subsection 1 of NAC 459.216:

1. Shall ensure that all labels affixed to the device at the time of receipt, and bearing a statement that removal of the label is prohibited, are maintained thereon and comply with all instructions and precautions provided by the labels.

2. Shall ensure that the device is tested for leakage of radioactive material and proper operation of the on-and-off mechanism and indicator, if any, and that such tests are conducted at no longer than 6-month intervals or at such other intervals as are specified in the label, except that:

(a) Devices containing only krypton need not be tested for leakage of radioactive material; and

(b) Devices containing only tritium or not more than 100 microcuries of other beta- or gamma-emitting material, or both, or 10 microcuries of alpha-emitting material and devices held

in storage in the original shipping container before initial installation need not be tested for any purpose.

3. Shall ensure that the tests required by subsection 2 and other testing, installation, servicing and removal from installation, involving the radioactive materials, its shielding or containment, are performed and recorded:

(a) In accordance with the instructions provided by the labels; or

(b) By a person holding an applicable specific license from the Division, the Nuclear Regulatory Commission or an agreement state to perform such activities.

4. Shall maintain records showing compliance with the requirements of subsections 2 and 3. The records must show the results of tests. The records also must show the dates of performance of, and the names of persons performing, testing, installing, servicing and removal from installation concerning the radioactive material, its shielding or containment. Records of tests for leakage of radioactive material required by subsection 2 must be ~~maintained until the sealed source is transferred or disposed of.~~ *retained for 3 years after the next required leak test is performed or until the sealed source is transferred or disposed of.* Records of tests of the on-and-off mechanism and indicator required by subsection 2 must be ~~maintained for 1 year~~ *retained for 3 years* after the next required test of the on-and-off mechanism and indicator is performed or until the sealed source is transferred or disposed of. Records which are required by subsection 3 must be ~~maintained~~ *retained* for ~~a period of 2~~ *3* years from the date of the recorded event or until the device is transferred or disposed of.

5. Upon the occurrence of a failure of or damage to, or any indication of a possible failure of or damage to, the shielding of the radioactive material or the on-and-off mechanism or indicator,

or upon the detection of 0.005 microcurie (185 ~~[becquerel]]~~ *becquerels*) or more of removable radioactive material:

(a) Shall immediately inform the ~~[Radiological Health Section of the]~~ Division by telephone;

(b) Shall immediately suspend operation of the device;

(c) Shall, within 30 days, furnish to the Division a report containing a brief description of the event and the remedial action taken;

(d) Shall, in a case of detection of 0.005 microcurie (185 ~~[becquerel]]~~ *becquerels*) or more of radioactive material or failure of or damage to a source likely to result in contamination of the premises or the environs, furnish to the Division a plan for ensuring that the premises and environs are acceptable for unrestricted use; and

(e) Shall not, in a case of detection of 0.005 microcurie (185 ~~[becquerel]]~~ *becquerels*) or more of radioactive material or failure of or damage to a source likely to result in contamination of the premises and the environs, operate the device until it has been repaired by the manufacturer or other person holding a specific license to repair the device issued pursuant to 10 C.F.R. Parts 30 and 32 or equivalent regulations of an agreement state.

6. Shall not abandon the device containing radioactive material.

7. *Shall not export the device containing the by-product material except in accordance with 10 C.F.R. § 110.*

8. Except as otherwise provided in subsection ~~[8.]~~ 9, may transfer or dispose of the device containing radioactive material only by *export, as provided in subsection 7, or by* transfer to a specific licensee of the Division, the Nuclear Regulatory Commission or an agreement state whose specific license authorizes him to receive the device or whose license authorizes waste

collection. Within 30 days after transfer of a device to a specific licensee, *or export, as provided in subsection 7*, the person shall furnish to the Division a report containing identification of the device by the manufacturer's or initial transferor's name, the model number and serial number of the device transferred, the name, address and license number of the person receiving the device and the date of the transfer. A transferor shall not transfer the device to any specific licensee not described in this subsection without first obtaining *written* approval of the transfer from the Division ~~7~~.

~~8.1~~ , *except that a holder of a specific license may transfer a device for possession and use pursuant to the holder's specific license without prior approval if the holder:*

*(a) Verifies that the specific license authorizes the possession and use, or applies for and obtains an amendment to the license authorizing the possession and use;*

*(b) Removes, alters, covers or clearly and unambiguously augments the existing label which is otherwise required by subsection 1, so that the device is labeled in compliance with 10 C.F.R. § 20.1904 and the manufacturer, model number and serial number are retained;*

*(c) Obtains the manufacturer's or initial transferor's information relating to maintenance that would be applicable under the specific license, including, without limitation, leak testing procedures; and*

*(d) Reports the transfer pursuant to this subsection.*

**9.** May transfer the device to another general licensee only:

(a) Where the device remains in use at a particular location. In such a case the transferor shall give the transferee a copy of NAC 459.010 to 459.794, inclusive, and *sections 2 to 45, inclusive, of this regulation and* any safety documents identified in the label on the device and , within 30

days after the transfer, shall report to the Division the manufacturer's or initial transferor's name, the model number and serial number of the device transferred, the name, title, telephone number and address of the transferee, and the name and position of a person who may constitute a point of contact between the Division and the transferee and who has knowledge of, and authority to take actions to ensure compliance with, the appropriate regulations and requirements; or

(b) Where the device is held in storage by an intermediate person in the original shipping container at its intended location of use before initial use by a general licensee.

~~{9.}~~ **10.** Shall comply with the provisions of NAC 459.369 and 459.3695 for reporting radiation incidents, theft or loss of licensed material, but is exempt from the other requirements of NAC 459.320 to 459.374, inclusive, and 459.780 to 459.794, inclusive.

~~{10.}~~ **11.** Except as otherwise provided in this subsection, shall respond to written requests from the Division to provide information relating to the general license within 30 calendar days after the date of the request or within the time specified in the request. If the general licensee cannot provide the requested information within the allotted time, the licensee shall, within the allotted time, request in writing additional time to comply with the request from the Division pursuant to the provisions of NAC 459.134.

~~{11.}~~ **12.** Shall appoint a person responsible for having knowledge of the appropriate regulations and requirements and the authority for taking required actions to comply with those regulations and requirements. The general licensee, through the person appointed pursuant to this subsection, shall ensure daily compliance with all applicable regulations and requirements. The



provisions of this subsection do not relieve the licensee of any responsibility or obligation under this chapter or chapter 459 of NRS.

~~{12.}~~ **13.** Except for a person who holds a general license issued by the Nuclear Regulatory Commission or an agreement state and who uses a device described in paragraph (a) in areas subject to the jurisdiction of the Division for a period of less than 180 days in any calendar year, *pursuant to the provisions of NAC 459.210*, shall:

(a) Register any device which contains:

- (1) Ten millicuries (370 megabecquerels) or more of cesium-137;
- (2) One-tenth ~~{millicuries}~~ *of a millicurie* (3.7 megabecquerels) or more of strontium-90;
- (3) One millicurie (37 megabecquerels) or more of cobalt-60;
- (4) *One-tenth of a millicurie (3.7 megabecquerels) or more of radium-226;*
- ~~(5)~~ (5) One millicurie (37 megabecquerels) or more of americium-241; or

~~{(5)}~~ (6) One millicurie (37 megabecquerels) or more of any other transuranic element, that is, an element with an atomic number greater than uranium-92,

↪ based on the activity indicated on the label. *Each address for a location of use, as described in subparagraph (5) of paragraph (b), represents a separate general licensee and requires a separate registration and fee.* The general licensee shall register the device annually with the Division and shall pay the appropriate fee. In registering the device, the person shall verify, correct and, as appropriate, add to the information provided in a request from the Division for registration. The registration information must be submitted to the Division within 30 days after the date of the request for registration made by the Division, unless otherwise indicated in the request.

(b) In complying with the registration requirements of paragraph (a), in addition to any other information specifically requested by the Division, provide, without limitation, the following information:

- (1) The name and mailing address of the general licensee;
- (2) The name of the manufacturer or initial transferor of each device;
- (3) The model number, serial number, radioisotope and activity, as indicated on the label, of each device;
- (4) The name, title and telephone number of the responsible person designated as a representative of the general licensee pursuant to subsection ~~H11~~ 12;
- (5) The address of the physical location at which each device is used and stored or, in the case of a portable device, the address of the primary place of storage;
- (6) A certification by the responsible person designated as the representative of the general licensee pursuant to subsection ~~H11~~ 12 that the information provided in the registration has been verified through a physical inventory and check of label information; and
- (7) A certification by the responsible person designated as the representative of the general licensee pursuant to subsection ~~H11~~ 12 that the responsible person is aware of the requirements of the general license.

~~H13~~ 14. Shall report to the Division any change to the mailing address for a location of use, including any change in the name of the general licensee, within 30 days after the effective date of the change. For a portable device, the general licensee is required to report only a change in the address of the primary place of storage of the portable device.

~~14.1~~ 15. Shall not hold a device that is not in use for more than 2 years, except that a device that is kept in standby for future use is excluded from the 2-year time limit if the general licensee performs physical inventories of those devices held in standby on a quarterly basis. If a device with shutters is not being used, the shutters must be locked in the closed position. If a device is put back into service or is transferred to another person and was not tested during the required test interval, the device must be tested for leakage before use or transfer and the shutter must be tested before use. The Division may determine the eligibility for release for unrestricted use of such a device in accordance with the provisions of NAC 459.3178.

**Sec. 64.** NAC 459.2185 is hereby amended to read as follows:

459.2185 1. Except as otherwise provided in subsection 2, before a person may transfer a device containing radioactive material to the intended user of the device or an intermediate transferee for use by the intended user:

(a) Pursuant to a general license issued pursuant to NAC 459.216, the person must be licensed pursuant to NAC 459.216 and 459.282 to distribute such devices and shall, before the initial transfer of the device, provide to the intended user of the device and each intermediate transferee:

(1) A copy of the general license of the transferor issued pursuant to NAC 459.216, except that if subsections 2, 3, 4 and ~~12.1~~ 13 of NAC 459.218 do not apply to the device those provisions may be omitted;

(2) A copy of the provisions of NAC 459.124, subsection 1 of NAC 459.194 and NAC 459.369 and 459.3695;

(3) A list of the services that can be performed only by a specific licensee;

(4) Information concerning acceptable disposal options, including, without limitation, information concerning estimated costs of disposal; and

(5) Notice that it is the policy of the Division to take enforcement action for improper disposal.

(b) Pursuant to a general license which is equivalent to a license issued pursuant to NAC 459.216 and which is issued pursuant to the regulations of the Nuclear Regulatory Commission or an agreement state, the person must be licensed pursuant to NAC 459.216 and shall, before the initial transfer of the device, provide to the intended user of the device and each intermediate transferee:

(1) A copy of the provisions of NAC 459.124, subsection 1 of NAC 459.194 and NAC 459.216 and 459.369 and a copy of the equivalent regulations of the Nuclear Regulatory Commission or agreement state, except that any provisions of the regulations of the Nuclear Regulatory Commission or agreement state which do not apply to the device may be omitted;

(2) If a copy of the regulations of the Nuclear Regulatory Commission is provided in lieu of a copy of the regulations of the agreement state pursuant to subparagraph (1), a statement that the use of the device is regulated by the agreement state;

(3) A list of the services that can be performed only by a specific licensee;

(4) Information concerning acceptable disposal options, including, without limitation, information concerning estimated costs of disposal; and

(5) The name or title, address and telephone number of the contact person at the Nuclear Regulatory Commission or appropriate regulatory agency of the agreement state from whom additional information may be obtained.

2. A licensee described in paragraph (a) or (b) of subsection 1 may propose an alternative method of informing an intended user of the device or other transferee of the type of information set forth in subsection 1 and may use the proposed method upon approval by the Division.

3. A general licensee who is subject to the provisions of paragraph (b) of subsection 1 and who transfers a device containing radioactive material after November 13, 2006, must comply with the provisions of NAC 459.282 concerning the labeling of the device.

**Sec. 65.** NAC 459.219 is hereby amended to read as follows:

459.219 Each address for a location of use described in subparagraph (5) of paragraph (b) of subsection ~~112~~ 13 of NAC 459.218 is deemed to represent a separate general license and requires separate registration and payment of a separate fee.

**Sec. 66.** NAC 459.224 is hereby amended to read as follows:

459.224 1. A general license is hereby issued to those persons listed to own, receive, acquire, possess, use and transfer, in accordance with the provisions of subsections 4 and 5, ~~[americium-241]~~ americium-241 in the form of calibration or reference sources:

(a) Any person who holds a specific license issued by the Division which authorizes him to receive, possess, use and transfer radioactive material; and

(b) Any person who holds a specific license issued by the Nuclear Regulatory Commission which authorizes him to receive, possess, use and transfer special nuclear material.

2. A general license is hereby issued to own, receive, possess, use and transfer plutonium in the form of calibration or reference sources in accordance with the provisions of subsections 4 and 5 to any person who holds a specific license issued by the Division which authorizes him to receive, possess, use and transfer radioactive material.

3. A general license is hereby issued to own, receive, possess, use and transfer ~~[radium-226]~~ *radium-226* in the form of calibration or reference sources in accordance with the provisions of subsections 4 and 5 to any person who holds a specific license issued by the Division which authorizes him to receive, possess, use and transfer radioactive material.

4. The general licenses in paragraphs (a), (b) and (d) of subsection 5 apply only to calibration or reference sources which have been manufactured *or initially transferred* in accordance with the specifications contained in a specific license issued to the manufacturer or importer of the sources by the Nuclear Regulatory Commission pursuant to 10 C.F.R. § 32.57 or ~~[10 C.F.R.]~~ § 70.39 or which have been manufactured in accordance with specifications contained in a specific license issued to the manufacturer by the Division or any agreement state pursuant to licensing requirements equivalent to those contained in 10 C.F.R. § 32.57 or ~~[10 C.F.R.]~~ § 70.39 of the regulations of the Nuclear Regulatory Commission.

5. The general licenses provided in subsections 1, 2 and 3 are subject to the provisions of NAC 459.124 to 459.134, inclusive, 459.198, 459.208, 459.312, 459.320 to 459.374, inclusive, and 459.780 to 459.794, inclusive. In addition, persons who own, receive, acquire, possess, use or transfer one or more calibration or reference sources pursuant to NAC 459.180 to 459.313, inclusive:

(a) Shall not possess at any one time or at any one location of storage or use more than 5 microcuries of ~~[americium-241]~~ *americium-241*, 5 microcuries of plutonium and 5 microcuries of ~~[radium-226]~~ *radium-226* in those sources;

(b) Shall not receive, possess, use or transfer such a source unless the source or its storage container bears a label which includes the following statement or a substantially similar statement:

The receipt, possession, use and transfer of this source, Model ....., Serial No. ...., are subject to a general license and the regulations of the Nuclear Regulatory Commission or of a state with which the Commission has entered into an agreement for the exercise of regulatory authority. Do not remove this label.

CAUTION - RADIOACTIVE MATERIAL - THIS SOURCE  
CONTAINS ~~(AMERICIUM-241)~~ (AMERICIUM-241)  
(PLUTONIUM) ~~(RADIUM-226)~~ (RADIUM-226). DO NOT  
TOUCH RADIOACTIVE PORTION OF THIS SOURCE.

.....

Name of manufacturer or importer

(c) Shall ensure that the label required by paragraph (b) shows only the name of the appropriate material;

(d) Shall not transfer, abandon or dispose of such source except by transfer to a person authorized by a license from the Division, the Nuclear Regulatory Commission or an agreement state to receive the source;

(e) Shall store such source, except when the source is being used, in a closed container adequately designed and constructed to contain ~~[americium-241,]~~ *americium-241* plutonium or ~~[radium-226]~~ *radium-226* which might otherwise escape during storage; and

(f) Shall not use such source for any purpose other than the calibration of radiation detectors or the standardization of other sources.

6. These general licenses do not authorize the manufacture of calibration or reference sources containing ~~[americium-241,]~~ *americium-241*, plutonium or ~~[radium-226,]~~ *radium-226*.

**Sec. 67.** NAC 459.236 is hereby amended to read as follows:

459.236 1. Applications for specific licenses must be filed on a form prescribed by the Division and accompanied by the appropriate fee as prescribed in NAC 459.310.

2. The Division may at any time after the filing of the original application, and before the expiration of the license, require further statements in order to enable the Division to determine whether the application should be granted or denied or whether a license should be modified or revoked.

3. Each application must be signed by the applicant or licensee or a person duly authorized to act for and on his behalf.

4. An application for a license may include a request for a license authorizing one or more activities.

5. In his application, the applicant may incorporate by reference information contained in previous applications, statements or reports filed with the Division provided such references are clear and specific.



6. Applications and documents submitted to the Division may be made available for public inspection except that the Division may withhold any document or part thereof from public inspection if disclosure of its content is not required in the public interest and would adversely affect the interest of a person concerned.

7. An application for a specific license to use radioactive material in the form of a sealed source or in a device that contains a sealed source must:

(a) Identify the source or device by manufacturer and model number as registered with the Nuclear Regulatory Commission , *or for a source or device which contains radium-226 or accelerator-produced radioactive material*, pursuant to the provisions of NAC 459.289 , ~~459.2895~~ *or 459.3075* or 10 C.F.R. § 32.210 or registered with an agreement state pursuant to an equivalent regulation of the agreement state; ~~459.2895~~

(b) Contain the information identified in NAC 459.289 , ~~459.2895~~ ~~459.2895~~ *or 459.3075* or 10 C.F.R. § 32.210 or an equivalent regulation of an agreement state ~~459.2895~~ ; *or*

(c) *For a source or device which contains naturally occurring or accelerator-produced radioactive material which was manufactured before the effective date of this regulation, which is not registered with the Division pursuant to NAC 459.3075, the Nuclear Regulatory Commission pursuant to 10 C.F.R. § 32.210 or an agreement state pursuant to an equivalent regulation of the agreement state, and for which the applicant cannot provide all the information specified in 10 C.F.R. § 32.210(c):*

*(1) Include all available information identified in 10 C.F.R. § 32.210(c) which concerns the source and, if applicable, the device; and*

*(2) Include sufficient additional information to demonstrate with reasonable assurance that the radiation safety properties of the source or device are adequate to protect health and minimize danger to life and property, including, without limitation, a description of the source or device, a description of the radiation safety features, the intended use and associated operating experience of the licensee and the results of a recent leak test of the source or device.*

8. If applicable pursuant to NAC 459.1955, an application for a specific license must contain a proposed plan for financing decommissioning or a certification of financial assurance for decommissioning.

*9. An application from a medical facility or educational institution to produce positron emission tomography radioactive drugs for noncommercial distribution to its licensees in its consortium authorized for use pursuant to the provisions of 10 C.F.R. Part 35 or an equivalent regulation of an agreement state must include:*

*(a) A request for authorization for the production of positron emission tomography radionuclides or evidence of an existing license for a positron emission tomography radionuclide production facility within its consortium, which is issued pursuant to NAC 459.180 to 459.313, inclusive, or an equivalent regulation in an agreement state from which it receives positron emission tomography radionuclides;*

*(b) Evidence that the applicant is qualified to produce radioactive drugs for medical use pursuant to NAC 459.300 or 10 C.F.R. § 32.72(a)(2);*

*(c) Identification of each person authorized to prepare the positron emission tomography radioactive drugs if the applicant is a pharmacy, and documentation that each meets the requirements of an authorized nuclear pharmacist pursuant to 10 C.F.R. § 32.72(b)(2); and*

*(d) Information set forth in 10 C.F.R. § 32.72(a)(3) concerning the positron emission tomography drugs to be noncommercially transferred to the members of its consortium.*

**Sec. 68.** NAC 459.266 is hereby amended to read as follows:

459.266 The limits for radioactive material for broad licenses are:

Radioactive material	Column I curies	Column II curies	Radioactive material	Column I curies	Column II curies
Antimony - 122	1.0	0.01	Erbium - 169	10.0	0.1
Antimony - 124	1.0	0.01	Erbium - 171	10.0	0.1
Antimony - 125	1.0	0.01	Europium - 152 (9.2 h)	10.0	0.1
Arsenic - 73	10.0	0.1	Europium - 152 (13 y)	0.1	0.001
Arsenic - 74	1.0	0.01	Europium - 154	0.1	0.001
Arsenic - 76	1.0	0.01	Europium - 155	1.0	0.01
Arsenic - 77	10.0	0.1	Fluorine - 18	100.0	1.0
Barium - 131	10.0	0.1	Gadolinium - 153	1.0	0.01
Barium - 140	1.0	0.01	Gadolinium - 159	10.0	0.1
Beryllium - 7	10.0	0.1	Gallium - 72	10.0	0.1
Bismuth - 210	0.1	0.001	Germanium - 71	100.0	1.0
Bromine - 82	10.0	0.1	Gold - 198	10.0	0.1
Cadmium - 109	1.0	0.01	Gold - 199	10.0	0.1
Cadmium - 115m	1.0	0.01	Hafnium - 181	1.0	0.01
Cadmium - 115	10.0	0.1	Holmium - 166	10.0	0.1
Calcium - 45	1.0	0.01	Hydrogen - 3	100.0	1.0
Calcium - 47	10.0	0.1	Indium - 113m	100.0	1.0
Carbon - 14	100.0	1.0	Indium - 114m	1.0	0.01
Cerium - 141	10.0	0.1	Indium - 115m	100.0	1.0
Cerium - 143	10.0	0.1	Indium - 115	1.0	0.01
Cerium - 144	0.1	0.001	Iodine - 125	0.1	0.001
Cesium - 131	100.0	1.0	Iodine - 126	0.1	0.001
Cesium - 134m	100.0	1.0	Iodine - 129	0.1	<del>0.001</del> 0.01
Cesium - 134	0.1	0.001	Iodine - 131	0.1	0.001
Cesium - 135	1.0	0.01	Iodine - 132	10.0	0.1
Cesium - 136	10.0	0.1	Iodine - 133	1.0	0.01
Cesium - 137	0.1	0.001	Iodine - 134	10.0	0.1
Chlorine - 36	1.0	0.01	Iodine - 135	1.0	0.01
Chlorine - 38	100.0	1.0	Iridium - 192	1.0	0.01
Chromium - 51	100.0	1.0	Iridium - 194	10.0	0.1
Cobalt - 57	10.0	0.1	Iron - 55	10.0	0.1
Cobalt - 58m	100.0	1.0	Iron - 59	1.0	0.01
Cobalt - 58	1.0	0.01	Krypton - 85	100.0	1.0
Cobalt - 60	0.1	0.001	Krypton - 87	10.0	0.1
Copper - 64	10.0	0.1	Lanthanum - 140	1.0	0.01
Dysprosium - 165	100.0	1.0	Lutetium - 177	10.0	0.1
Dysprosium - 166	10.0	0.1	Manganese - 52	1.0	0.01

Radioactive material	Column I curies	Column II curies
Manganese - 54	1.0	0.01
Manganese - 56	10.0	0.1
Mercury - 197m	10.0	0.1
Mercury - 197	10.0	0.1
Mercury - 203	1.0	0.01
Molybdenum - 99	10.0	0.1
Neodymium - 147	10.0	0.1
Neodymium - 149	10.0	0.1
Nickel - 59	10.0	0.1
Nickel - 63	1.0	0.01
Nickel - 65	10.0	0.1
Niobium - 93m	1.0	0.01
Niobium - 95	1.0	0.01
Niobium - 97	100.0	1.0
Osmium - 185	1.0	0.01
Osmium - 191m	100.0	1.0
Osmium - 191	10.0	0.1
Osmium - 193	10.0	0.1
Palladium - 103	10.0	0.1
Palladium - 109	10.0	0.1
Phosphorus - 32	1.0	0.01
Platinum - 191	10.0	0.1
Platinum - 193m	100.0	1.0
Platinum - 193	10.0	0.1
Platinum - 197m	100.0	1.0
Platinum - 197	10.0	0.1
Polonium - 210	0.01	0.0001
Potassium - 42	1.0	0.01
Praseodymium - 142	10.0	0.1
Praseodymium - 143	10.0	0.1
Promethium - 147	1.0	0.01
Promethium - 149	10.0	0.1
Radium - 226	0.01	0.0001
Rhenium - 186	10.0	0.1
Rhenium - 188	10.0	0.1
Rhodium - 103m	1,000.0	10.0
Rhodium - 105	10.0	0.1
Rubidium - 86	1.0	0.01
Rubidium - 87	1.0	0.01
Ruthenium - 97	100.0	1.0
Ruthenium - 103	1.0	0.01
Ruthenium - 105	10.0	0.1
Ruthenium - 106	0.1	0.001
Samarium - 151	1.0	0.01
Samarium - 153	10.0	0.1
Scandium - 46	1.0	0.01
Scandium - 47	10.0	0.1
Scandium - 48	1.0	0.01
Selenium - 75	1.0	0.01
Silicon - 31	10.0	0.1
Silver - 105	1.0	0.01
Silver - 110m	0.1	0.001
Silver - 111	10.0	0.1
Sodium - 22	0.1	0.001
Sodium - 24	1.0	0.01
Strontium - 85m	1,000.0	10.0
Strontium - 85	1.0	0.01
Strontium - 89	1.0	0.01
Strontium - 90	0.01	0.0001
Strontium - 91	10.0	0.1
Strontium - 92	10.0	0.1
Sulphur - 35	10.0	0.1

Radioactive material	Column I curies	Column II curies
Tantalum - 182	1.0	0.01
Technetium - 96	10.0	0.1
Technetium - 97m	10.0	0.1
Technetium - 97	10.0	0.1
Technetium - 99m	100.0	1.0
Technetium - 99	1.0	0.01
Tellurium - 125m	1.0	0.01
Tellurium - 127m	1.0	0.01
Tellurium - 127	10.0	0.1
Tellurium - 129m	1.0	0.01
Tellurium - 129	100.0	1.0
Tellurium - 131m	10.0	0.1
Tellurium - 132	1.0	0.01
Terbium - 160	1.0	0.01
Thallium - 200	10.0	0.1
Thallium - 201	10.0	0.1
Thallium - 202	10.0	0.1
Thallium - 204	1.0	0.01
Thulium - 170	1.0	0.01
Thulium - 171	1.0	0.01
Tin - 113	1.0	0.01
Tin - 125	1.0	0.01
Tungsten - 181	1.0	0.01
Tungsten - 185	1.0	0.01
Tungsten - 187	10.0	0.1
Vanadium - 48	1.0	0.01
Xenon - 131m	1,000.0	10.0
Xenon - 133	100.0	1.0
Xenon - 135	100.0	1.0
Ytterbium - 175	10.0	0.1
Yttrium - 90	1.0	0.01
Yttrium - 91	1.0	0.01
Yttrium - 92	10.0	0.1
Yttrium - 93	1.0	0.01
Zinc - 65	1.0	0.01
Zinc - 69m	10.0	0.1
Zinc - 69	100.0	1.0
Zirconium - 93	1.0	0.01
Zirconium - 95	1.0	0.01
Zirconium - 97	1.0	0.01
Any radioactive material other than source material, special nuclear material, or alpha emitting radioactive material not listed above.	0.1	0.001

**Sec. 69.** NAC 459.274 is hereby amended to read as follows:

459.274 Specific licenses of broad scope are subject to the following conditions:

1. Unless specifically authorized, persons licensed pursuant to NAC 459.262 may not:
  - (a) Conduct tracer studies in the environment involving direct release of radioactive material;
  - (b) Receive, acquire, own, possess, use or transfer devices containing 100,000 curies or more of radioactive material in sealed sources used for irradiation of materials;
  - (c) Conduct activities for which a specific license issued by the Division under NAC ~~[459.2434, 459.2565 and]~~ 459.276 to 459.307, inclusive, is required; or
  - (d) Add or cause the addition of radioactive material to any food, beverage, cosmetic, drug, or other product designed for ingestion or inhalation by, or application to, a human being.
2. Each type A specific license of broad scope issued under NAC 459.180 to 459.274, inclusive, will be subject to the condition that radioactive material possessed under the license may only be used by, or under the direct supervision of, persons approved by the radiation safety committee of the licensee.
3. Each type B specific license of broad scope issued under this article is subject to the condition that radioactive material possessed under the license may only be used by, or under the direct supervision of, persons approved by the radiation safety officer of the licensee.
4. Each type C specific license of broad scope issued under this article is subject to the condition that radioactive material possessed under the license may only be used by, or under the direct supervision of, persons who satisfy the requirements of NAC 459.272.

**Sec. 70.** NAC 459.282 is hereby amended to read as follows:

459.282 An application for a specific license to manufacture or distribute devices containing radioactive material, excluding special nuclear material, to persons generally licensed under NAC 459.216 or equivalent regulations of the Nuclear Regulatory Commission or an agreement state will be approved if:

1. The applicant satisfies the general requirements of NAC 459.238.
2. The applicant submits sufficient information relating to the design, manufacture, prototype testing, quality control, labels, proposed uses, installation, servicing, leak testing, operating and safety instructions and potential hazards of the device to provide reasonable assurance that:

(a) The device can be safely operated by persons not having training in radiological protection;

(b) Under ordinary conditions of handling, storage and use of the device, the radioactive material contained in the device will not be released or inadvertently removed from the device, and it is unlikely that any person will receive in any period of 1 year a dose in excess of 10 percent of the limits specified in NAC 459.325; and

(c) In an accident such as fire or explosion, associated with handling, storage and use of the device, it is unlikely that any person would receive an external radiation dose or dose commitment in excess of the following organ doses:

- (1) Whole body, head and trunk, active blood-forming organs, gonads  
or lens of eye .....15 rems
- (2) Hands and forearms, feet and ankles, localized areas of skin  
averaged over areas not larger than 1 square centimeter .....200 rems

(3) Other organs .....50 rems

3. Each device bears a durable, legible, clearly visible label or labels approved by the Division which contain in a clearly identified and separate statement:

(a) Instructions and precautions necessary to assure safe installation, operation and maintenance of the device. Documents such as operating and service manuals may be identified in the label and used to provide this information.

(b) The requirement, or lack of requirement, for leak testing, or for testing any on-and-off mechanism and indicator, including the maximum time interval for such testing, and the identification of radioactive material by isotope, quantity of radioactivity and date of determination of the quantity.

(c) The information called for in the following statement, in the same or substantially similar form:

The receipt, possession, use and transfer of this device model, serial number, are subject to a general license or the equivalent and the regulations of the Nuclear Regulatory Commission or a state with which the Nuclear Regulatory Commission has entered into an agreement for the exercises of regulatory authority. This label must be maintained on the device in a legible condition. Removal of this label is prohibited.

CAUTION - RADIOACTIVE MATERIAL

.....

(Name of manufacturer or distributor)

(d) The model, serial number and name of the manufacturer or distributor may be omitted from the label required by this subsection if the information is specified elsewhere and labeling is affixed to the device.

4. Each device that has a separable source housing that provides primary shielding for the source also bears, on the source housing, a durable label listing the model number and serial number of the device, the isotope and quantity, the radiation symbol described in NAC 459.355, the words “CAUTION - RADIOACTIVE MATERIAL” and the name of the manufacturer or initial distributor of the device.

5. Each device described in paragraph (a) of subsection ~~12~~ 13 of NAC 459.218 bears a permanent label, including, without limitation, an embossed, etched, engraved or a stamped label, affixed to the source housing if separable or to the device if the source housing is not separable, which contains the words “CAUTION - RADIOACTIVE MATERIAL” and the radiation symbol described in NAC 459.355, if practicable.

**Sec. 71.** NAC 459.296 is hereby amended to read as follows:

459.296 An application for a specific license to manufacture or distribute radioactive material for use under the general license of NAC 459.228 will be approved if:

1. The applicant satisfies the general requirements specified in NAC 459.238.
2. The radioactive material is to be prepared for distribution in prepackaged units of:
  - (a) ~~Iodine-125~~ *Iodine-125* in units not exceeding 10 microcuries each.



- (b) ~~[Iodine-131]~~ *Iodine-131* in units not exceeding 10 microcuries each.
  - (c) ~~[Carbon-14]~~ *Carbon-14* in units not exceeding 10 microcuries each.
  - (d) ~~[Hydrogen-3]~~ *Hydrogen-3* (tritium) in units not exceeding 50 microcuries each.
  - (e) ~~[Iron-59]~~ *Iron-59* in units not exceeding 20 microcuries each.
  - (f) ~~[Cobalt-57]~~ *Cobalt-57* in units not exceeding 10 microcuries each.
  - (g) ~~[Selenium-75]~~ *Selenium-75* in units not exceeding 10 microcuries each.
  - (h) Mock ~~[iodine-125]~~ *iodine-125* in units not exceeding 0.05 microcurie of ~~[iodine-129]~~ *iodine-129* and 0.005 microcurie of ~~[americium-241]~~ *americium-241* each.
3. Each prepackaged unit 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:
    - (1) Ten microcuries (*0.37 megabecquerel*) of ~~[iodine-125, iodine-131, selenium-75, cobalt-57 or carbon-14;]~~ *iodine-125, iodine-131, selenium-75, cobalt-57 or carbon-14;*
    - (2) Fifty microcuries (*1.85 megabecquerels*) of ~~[hydrogen-3]~~ *hydrogen-3* (tritium);
    - (3) Twenty microcuries (*0.74 megabecquerel*) of ~~[iron-59;]~~ *iron-59;* or
    - (4) For mock ~~[iodine-125;]~~ *iodine-125;* 0.05 microcurie (*1.85 kilobecquerels*) of ~~[iodine-129]~~ *iodine-129* and 0.005 microcurie (*0.185 kilobecquerel*) of ~~[americium-241]~~ *americium-241* each.
  - (b) Displaying the radiation caution symbol described in NAC 459.355 and the words, “CAUTION - RADIOACTIVE MATERIAL,” and “Not for Internal or External Use in Humans or Animals.”

4. The following statement, or a substantially similar statement which contains the information called for in the following statement, appears on a label affixed to each prepackaged unit or appears in leaflet or brochure which accompanies the package:

This radioactive material may be received, acquired, possessed and used only by physicians, clinical laboratories or hospitals and only for in vitro clinical or laboratory tests not involving internal or external administration of the material, or the radiation therefrom, to human beings or animals. Its receipt, acquisition, possession, use and transfer are subject to the regulations and a general license of the Nuclear Regulatory Commission or of a state with which the Commission has entered into an agreement for the exercise of regulatory authority.

.....

Name of Manufacturer

5. The label affixed to the unit, or the leaflet or brochure which accompanies the package, contains adequate information regarding the precautions to be observed in handling and storing such radioactive material. In the case of the mock ~~iodine-125~~ *iodine-125* reference or calibration source, the information accompanying the source must also contain directions to the licensee regarding the waste disposal requirements of NAC 459.3355 and 459.359 to 459.3615, inclusive.

**Sec. 72.** NAC 459.300 is hereby amended to read as follows:

459.300 1. An application for a specific license to manufacture, prepare or transfer for commercial distribution radioactive drugs containing radioactive material for use by persons authorized under a license issued by the Nuclear Regulatory Commission or any other agreement state will be approved if:

(a) The applicant satisfies the general requirements specified in NAC 459.238;

(b) The applicant submits evidence that the applicant is:

(1) Registered or licensed as ~~{a drug manufacturer}~~ *the owner or operator of a drug establishment that engages in the manufacture, preparation, propagation, compounding or processing of a drug* by:

(I) The United States Food and Drug Administration ~~{}~~ *pursuant to 21 C.F.R. § 207.20(a);* or

(II) An agency of this State ~~{}~~ *pursuant to equivalent regulations;*

(2) Licensed as a pharmacy by the State Board of Pharmacy; ~~{or}~~

(3) Operating as a nuclear pharmacy within a medical facility; *or*

*(4) A positron emission tomography drug production facility licensed by or registered with a state agency;*

(c) The applicant submits information on the radionuclide, chemical and physical form, maximum activity per vial, syringe, generator or other container of the radioactive drug and shielding provided by the packaging of the radioactive material to demonstrate that it is appropriate for safe handling and storage of radioactive drugs by licensees authorized to use radioactive material for medical use; and

(d) The applicant complies with the following labeling requirements:

(1) A label must be affixed to each transport radiation shield of the radioactive drug, including, without limitation, shields made of lead, glass or plastic, to be transferred for commercial distribution. The label must set forth or contain the radiation symbol, the words “CAUTION, RADIOACTIVE MATERIAL” or “DANGER, RADIOACTIVE MATERIAL,” the name of the radioactive drug, or its abbreviation, and the quantity of radioactivity at the time and date specified on the label. For radioactive drugs with a half-life of more than 100 days, the time may be omitted from the label.

(2) A label must be affixed to each syringe, vial or other container used to hold a radioactive drug to be transferred for commercial distribution. The label must set forth the radiation symbol, the words “CAUTION, RADIOACTIVE MATERIAL” or “DANGER, RADIOACTIVE MATERIAL” and an identifier ~~that~~ *which* ensures that the syringe, vial or other container can be correlated with the information on the transport radiation shield label.

2. A licensee who is licensed as a pharmacy by the State Board of Pharmacy or who is operating as a nuclear pharmacy within a medical facility:

(a) May prepare a radioactive drug for medical use if the radioactive drug is prepared by an authorized nuclear pharmacist ~~is~~ *as specified in paragraphs (b) and (c) or a person under the supervision of an authorized nuclear pharmacist as defined in 10 C.F.R. § 35.27.*

(b) May allow a pharmacist to work as an authorized nuclear pharmacist if the pharmacist ~~is~~ *qualifies as* an authorized nuclear pharmacist ~~is~~, *as defined in 10 C.F.R. § 35.2, or if the pharmacist meets the requirements of 10 C.F.R. §§ 35.55(b) and 35.59, and the licensee has received an approved license amendment which identifies the pharmacist as an authorized nuclear pharmacist.*

(c) May designate a pharmacist as an authorized nuclear pharmacist if the pharmacist ~~is identified, as of November 13, 2006, as an authorized user on a license for a nuclear pharmacy issued by the Division, the Nuclear Regulatory Commission pursuant to 10 C.F.R. Part 32 or an agreement state.~~ *]:*

*(1) Was a nuclear pharmacist preparing only radioactive drugs containing accelerator-produced radioactive material; and*

*(2) Practiced at a pharmacy at a government agency or federally recognized Indian tribe before November 30, 2007, or at any other pharmacy before August 8, 2009, or an earlier date as noticed by the Nuclear Regulatory Commission.*

(d) Shall provide to the Division:

(1) A copy of the certification ~~[, license or permit for each pharmacist that authorizes the pharmacist to perform any of the activities set forth in this subsection within 30 days after performing such activities.]~~ *by a specialty board whose certification process has been recognized by the Nuclear Regulatory Commission or an agreement state as provided in 10 C.F.R. § 35.55(a) with the written attestation signed by a preceptor as required by 10 C.F.R. § 35.55(b)(2);*

*(2) A copy of:*

*(I) The Nuclear Regulatory Commission or agreement state license;*

*(II) The Nuclear Regulatory Commission master materials licensee permit; or*

*(III) The permit issued by a licensee or Nuclear Regulatory Commission master materials permittee of broad scope;*

*(3) The authorization from a commercial nuclear pharmacy that is authorized to list its own authorized nuclear pharmacist or documentation which indicates that only accelerator-produced radioactive materials were used in the practice of nuclear pharmacy at a government agency or federally recognized Indian Tribe before November 30, 2007, or at all other locations of use before August 8, 2009, or an earlier date as noticed by the Nuclear Regulatory Commission; and*

~~[(2)]~~ (4) A copy of the license or registration of the pharmacy or nuclear pharmacy within 30 days after the pharmacist performs any of the activities set forth in this subsection.

3. A licensee who prepares radioactive drugs for medical use pursuant to this section shall:

(a) Possess and use an instrument to measure the radioactivity of alpha-, beta- or photon-emitting radioactive drugs;

(b) Have procedures for the use of the instrument;

(c) 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 before transfer for commercial distribution;

(d) Perform tests before initial use, periodically and following repair on each instrument for accuracy, linearity and geometry dependence, as appropriate for the instrument, and make adjustments to the instrument if necessary; and

(e) Check each instrument for constancy and proper operation at the beginning of each day of use.

4. ~~[No provision]~~ *The provisions* of this section ~~[relieves]~~ *do not relieve* a licensee of his duty to comply with any other federal, state or local requirement governing the receipt, administration or use of drugs or radioactive drugs.

**Sec. 73.** NAC 459.306 is hereby amended to read as follows:

459.306 An application for a specific license to manufacture and distribute sources and devices containing radioactive material to persons licensed pursuant to 10 C.F.R. Part 35 or equivalent regulations of an agreement state, for use as a calibration, *transmission* or reference source or for the uses listed in 10 C.F.R. §§ 35.400, 35.500, ~~[and]~~ 35.600 *and 35.1000* or equivalent regulations of an agreement state, will be approved if:

1. The applicant satisfies the general requirements in NAC 459.238;
2. The applicant submits sufficient information regarding each type of source or device pertinent to an evaluation of its radiation safety, including:
  - (a) The radioactive material contained, its chemical and physical form, and amount;
  - (b) Details of design and construction of the source or device;
  - (c) Procedures for, and results of, prototype tests to demonstrate that the source or device will maintain its integrity under stresses likely to be encountered in normal use and in accidents;
  - (d) For devices containing radioactive material, the radiation profile of a prototype device;
  - (e) Details of quality control procedures to ensure that production sources and devices meet the standards of the design and prototype tests;
  - (f) Procedures and standards for calibrating sources and devices;
  - (g) Legends and methods for labeling sources and devices as to their radioactive content; and

(h) Instructions for handling and storing the source or device from the radiation safety standpoint, which instructions must be included on a durable label attached to the source or device or attached to a permanent storage container for the source or device, provided that instructions which are too lengthy for the label may be summarized on the label and printed in detail on a brochure which is referenced on the label; and

3. The label affixed to the source, device or permanent storage container for the source or device contains information on the radionuclide, quantity and date of assay, and a statement that the source or device is approved by the Division for distribution to persons licensed to use radioactive material identified in 10 C.F.R. §§ ~~[35.57,]~~ **35.65**, 35.400, 35.500 and 35.600 or to persons who hold equivalent licenses of the Nuclear Regulatory Commission or an agreement state.

**Sec. 74.** NAC 459.3062 is hereby amended to read as follows:

459.3062 1. The provisions of 10 C.F.R. Part 35, as they existed on ~~[September 16, 2004,]~~ **November 30, 2007**, are hereby adopted by reference, subject to the following:

(a) 10 C.F.R. §§ 35.8, **35.10(a), 35.11(c)(2), 35.13(a)(1), 35.13(a)(2), 35.13(b)(5), 35.14(a), 35.15(f), 35.57(b)(3)**, 35.4001 and 35.4002 are not adopted by reference.

(b) Except as otherwise provided in this chapter, the implementation date ~~[described]~~ **specified** in 10 C.F.R. §§ 35.10(a) and 35.10(d) is November 13, 2006.

(c) Except as otherwise provided in this chapter, the October 24, 2002, date ~~[described]~~ **specified** in 10 C.F.R. § 35.57(a)(1) shall be deemed to mean November 13, 2006.

(d) **Except as otherwise provided in this chapter, the April 29, 2005, date specified in 10 C.F.R. § 35.57(a)(2) shall be deemed to mean April 29, 2008.**



(e) Except as otherwise provided in this section, any reference in 10 C.F.R. Part 35 to:

(1) “10 CFR Part 19” or “10 CFR 19” shall be deemed to mean “NAC 459.780 to 459.794, inclusive.”

(2) “10 CFR 19.12” or “§ 19.12” shall be deemed to mean “NAC 459.784.”

(3) “10 CFR Part 20” or “10 CFR 20” shall be deemed to mean “NAC 459.320 to 459.374, inclusive.”

(4) “10 CFR 20.1101” or “§ 20.1101” shall be deemed to mean “paragraph (a) of subsection 1 of NAC 459.321.”

(5) “10 CFR 20.1301(a)(1)” or “§ 20.1301(a)(1)” shall be deemed to mean “paragraph (a) of subsection 1 of NAC 459.335.”

(6) “10 CFR 20.1301(c)” or “§ 20.1301(c)” shall be deemed to mean ~~“paragraph (c) of subsection 1”~~ **“subsection 2** of NAC 459.335.”

(7) “10 CFR 20.1501” or “§ 20.1501” shall be deemed to mean “NAC 459.337.”

(8) “10 CFR Part 30” or “10 CFR 30” shall be deemed to mean “NAC 459.180 to 459.313, inclusive.”

(9) “10 CFR 30.34(b)” or “§ 30.34(b)” shall be deemed to mean “subsection 2 of NAC 459.198.”

(10) “10 CFR 30.6” or “§ 30.6” shall be deemed to mean “NAC 459.134.”

(11) “10 CFR 32.72(b)(4)” or “§ 32.72(b)(4)” shall be deemed to mean “paragraph (c) of subsection 2 of NAC 459.300.”

(12) “10 CFR Part 33” or “10 CFR 33” shall be deemed to mean “NAC 459.262 to 459.274, inclusive.”

- (13) “10 CFR 33.13” or “§ 33.13” shall be deemed to mean “NAC 459.268.”
- (14) “10 CFR Part 170,” “10 CFR 170,” “10 CFR Part 171” or “10 CFR 171” shall be deemed to mean “NAC 459.310.”
- (15) “Byproduct material” shall be deemed a reference to “radioactive material.”
- (16) “Commission” or “NRC” shall be deemed a reference to “Division.”
- (17) “Commission’s regulations,” “federal regulations” or “NRC regulations” shall be deemed a reference to “NAC 459.010 to 459.950, inclusive ~~[.]~~, *and sections 2 to 45, inclusive, of this regulation.*”
- (18) “NRC Form 313” shall be deemed a reference to “NRC Form 5,” Application for Radioactive Material License, ~~[described in NAC 459.2434.]~~ *specified by the Division.*
- (19) “NRC license” shall be deemed a reference to “license issued by the Division pursuant to NAC 459.010 to 459.950, inclusive ~~[.]~~, *and sections 2 to 45, inclusive, of this regulation.*”
- (20) “NRC Operations Center ~~[.]~~,” *“NRC Regional Office listed in § 30.6”* or “Director, Office of Nuclear Safety and Safeguards” shall be deemed a reference to “the provisions of NAC 459.134 and the contact information described in the State of Nevada Radiological Emergency Response Plan.”
- (21) “NRC or an Agreement State,” “Commission or an Agreement State” or “Commission or by an Agreement State” shall be deemed a reference to “Division, Nuclear Regulatory Commission or an agreement state.”
- (22) *The text of 10 C.F.R. § 35.491(b)(3) shall be deemed to read “Has obtained written attestation, signed by a preceptor authorized user who meets the requirements in § 35.490 or §*

*35.491 or equivalent requirements of an Agreement State, that the individual has satisfactorily completed the requirements in paragraph (b)(1) and (b)(2) of this section and has achieved a level of competency sufficient to function independently as an authorized user of strontium-90 for ophthalmic use.”*

~~(e)~~ (f) The full text of any sentence that contains a reference to “10 CFR Part 21,” “10 CFR 21,” “10 CFR 30.7,” “§ 30.7,” “10 CFR 30.9,” “§ 30.9,” “10 CFR 30.10” or “§ 30.10” shall be deemed omitted.

2. A copy of the volume containing 10 C.F.R. Part 35 may be obtained *by mail* from the Superintendent of Documents, United States Government Printing Office, ~~Washington, D.C. 20402-9325,~~ *P.O. Box 979050, St. Louis, Missouri 63197-9000, or by toll-free telephone at (866) 512-1800,* at a cost of ~~[\$61,]~~ *\$67,* or free of charge at the Internet address <http://www.gpoaccess.gov/cfr/index.html>.

**Sec. 75.** NAC 459.310 is hereby amended to read as follows:

459.310 Except as otherwise provided in NAC 459.203, the Division will not issue a new specific license or a renewed specific license to a person until the appropriate nonrefundable fee has been paid to the Division, as prescribed in the following table:

Material and use	Fee
------------------	-----

1. Special nuclear material:

(a) As sealed source .....	\$2,000
----------------------------	---------

Material and use	Fee
(b) In unsealed form .....	2,000
2. Source materials for other than milling operations .....	\$2,200
3. By-product material, artificially produced radioactive material and radium:	
(a) Manufacturing or distribution, or both .....	\$2,200
(b) Nuclear pharmacy .....	6,600
(c) Industrial radiography .....	5,500
(d) Category 1 (self-shielded) irradiator .....	1,650
(e) Academic, broad scope .....	8,800
(f) Academic, other research and development .....	1,320
(g) Service or laboratory .....	1,760
(h) Fixed gauge .....	1,100
(i) Gas chromatograph .....	496
(j) In vitro .....	105
(k) Portable gauge or X-ray fluorescence analyzer .....	1,320
(l) All other uses of radioactive material except those set forth in subsections 4 to 8, inclusive .....	1,000
4. Well logging .....	\$3,300
5. Medical use or veterinary use of radioactive material:	
(a) Medical use or veterinary use .....	\$4,400

Material and use	Fee
(b) General license for in vitro use.....	125
6. Civil defense .....	\$276
7. Registration of devices generally licensed pursuant to paragraph (a) of subsection <del>12</del> 13 of NAC 459.218 .....	\$250
8. Any use of radioactive material by a person who holds a specific license issued by the Nuclear Regulatory Commission or any agreement state.....	See  appropriate fee  category above

**Sec. 76.** NAC 459.313 is hereby amended to read as follows:

459.313 1. A licensee who ships radioactive waste intended for ultimate disposal at a licensed land disposal facility must document the information required on *the* Nuclear Regulatory ~~[Commission Form 541,]~~ *Commission's* Uniform Low-Level Radioactive Waste Manifest, and transfer the recorded manifest information to the intended consignee in accordance with the provisions of Appendix G.

2. Each manifest described in subsection 1 must include a certification by the waste generator as provided in section II of Appendix G.

3. Each person involved in the transfer for disposal or the disposal of radioactive waste, including, without limitation, the waste generator, waste collector, waste processor and disposal facility operator, shall comply with the requirements of section III of Appendix G.

*4. A licensee who ships any by-product material specified in subsections 2 and 3 of NAC 459.022, which is intended for disposal at a land disposal facility licensed pursuant to 10 C.F.R. Part 61, shall document the information required on the Nuclear Regulatory Commission's Uniform Low-Level Radioactive Waste Manifest and transfer the recorded information to the intended consignee in accordance with Appendix G.*

**Sec. 77.** NAC 459.325 is hereby amended to read as follows:

459.325 1. Except as otherwise provided in subsection 5, a licensee or registrant shall control occupational doses, except for planned special exposures, to ensure that no adult receives annually occupational doses in excess of the following limits:

(a) The lesser of:

(1) A total effective dose equivalent of 5 rems (50 millisieverts); or

(2) The sum of the deep-dose equivalent and the committed dose equivalent to any individual organ or tissue, other than the lens of the eye, of 50 rems (500 millisieverts);

(b) A lens dose equivalent of 15 rems (150 millisieverts); and

(c) A shallow-dose equivalent to the skin of the whole body or the skin of any extremity of 50 rems (500 millisieverts).

2. Occupational doses received in excess of the annual limits specified in subsection 1, including doses received during accidents, emergencies and planned special exposures, must be subtracted from the limits for planned special exposures that a person may receive during a current year and during his lifetime.

*3. When the external exposure is determined by a measurement with an external personal monitoring device, the deep-dose equivalent must be used in lieu of the effective dose*

*equivalent, unless the effective dose equivalent is determined by a dosimetry method approved by the Division.* The assigned deep-dose equivalent must be for the portion of the body receiving the highest exposure. The assigned shallow-dose equivalent must be the dose averaged over the contiguous 10 square centimeters of skin receiving the highest exposure. The deep-dose equivalent, lens dose equivalent and shallow-dose equivalent may be assessed from surveys or other radiation measurements for the purpose of demonstrating compliance with the limits for occupational doses, if the personnel monitoring equipment was not in the region of highest potential exposure, or the results of personnel monitoring are unavailable.

4. The derived air concentration and annual limit on intake values that are set forth in table I of appendix B may be used to determine the occupational dose of a person and to demonstrate compliance with the limits for occupational doses.

5. Notwithstanding the annual limits, a licensee shall limit a person's intake of soluble uranium to 10 milligrams in 1 week.

6. The licensee or registrant shall reduce the occupational dose that a person is allowed to receive in a current year by the amount of the occupational dose that person received during the year while employed by another person.

**Sec. 78.** NAC 459.337 is hereby amended to read as follows:

459.337 1. Each licensee and registrant shall make, or cause to be made, surveys that:

(a) Are necessary for the licensee or registrant to comply with NAC 459.010 to 459.950, inclusive ~~§~~, *and sections 2 to 45, inclusive, of this regulation;* and

(b) Are necessary under the circumstances to evaluate:

(1) The magnitude and extent of radiation levels;

(2) Concentrations or quantities of radioactive material; and

(3) The potential radiological hazards.

2. *The Division may exempt a licensee or registrant from the requirements of subsection 1 if the Division determines that the exemption will not result in a significant risk to public health and safety.*

3. The licensee or registrant shall ensure that instruments and equipment used for quantitative radiation measurements are calibrated for the radiation measured at intervals not to exceed 12 months.

~~3.1~~ 4. 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 dose of radiation and that are used by licensees and registrants to comply with NAC 459.325, with other applicable provisions of NAC 459.010 to 459.950, inclusive, *and sections 2 to 45, inclusive, of this regulation* or with conditions specified in a license or registration must be processed and evaluated by a dosimetry processor who is accredited by the National Voluntary Laboratory Accreditation Program of the National Institute of Standards and Technology for the type of radiation or radiations included in the program that most closely approximate the type of radiation for which the person wearing the dosimeter is monitored.

~~4.1~~ 5. The licensee or registrant shall ensure that adequate precautions are taken to prevent a deceptive exposure of personnel monitoring equipment.

**Sec. 79.** NAC 459.3585 is hereby amended to read as follows:



459.3585 1. Each licensee who expects to receive a package containing quantities of radioactive material in excess of a type A quantity, as defined in 10 C.F.R. § 71.4, as that section existed on ~~January 1, 1993,~~ *November 14, 2007*, shall make arrangements to receive:

- (a) The package when the carrier offers it for delivery; or
- (b) Notification of the arrival of the package at the terminal of the carrier and to take possession of the package expeditiously.

2. Except as otherwise provided in subsection 6, each licensee shall monitor the external surfaces of a package known to contain radioactive material for radioactive contamination and radiation levels if the package:

- (a) Is labeled as containing radioactive material; or
- (b) Has evidence of potential contamination.

3. The licensee shall perform the monitoring required ~~pursuant to~~ *by* subsection 2 as soon as practicable after receipt of the package, but not later than 3 hours after the package is received at the facility of the licensee if the package is received during the normal working hours of the licensee. If the package is received after the normal working hours of the licensee, the monitoring must be performed not later than 3 hours after the beginning of the next normal working day of the licensee.

4. A licensee shall immediately notify the carrier who made the final delivery of a package and, by telephone and telegram, mailgram or facsimile, the Division ~~if~~ if:

- (a) Removable radioactive contamination on the surface of the package is detected that exceeds 22,000 disintegrations per minute per 100 square centimeters of package surface; or

(b) The radiation level at 1 meter from the surface of the package exceeds 10 milliroentgens per hour.

5. Each licensee shall:

(a) Establish, maintain and retain written procedures for safely opening packages in which radioactive material is received; and

(b) Ensure that the procedures established pursuant to paragraph (a) are followed and that consideration is given to any special instructions for the type of package being opened.

6. A licensee transferring a source of radiation in a special form in a motor vehicle owned or operated by the licensee to and from a work site is not required to comply with the requirements of subsection 2, but shall ensure that the source of radiation is still properly lodged in its shield.

~~[7. — For the purposes of this section, the State Board of Health hereby adopts by reference 10 C.F.R. § 71.4, as that section existed on January 1, 1993. A copy of the volume containing that section may be purchased from the Superintendent of Documents, United States Government Printing Office, Washington, D.C. 20402, for the price of \$21.]~~

**Sec. 80.** NAC 459.368 is hereby amended to read as follows:

459.368 1. Requirements for notification and reports to persons of exposure to radiation or radioactive material are specified in NAC 459.786.

2. When a licensee or registrant is required by NAC 459.371 *or 459.3715* to report to the Division any exposure of ~~[a]~~ *an identified occupationally exposed* person *or an identified member of the public* to radiation or radioactive material, the licensee or registrant shall also notify the person *or member of the public* who was exposed. The notice must be transmitted at a

time not later than the transmittal to the Division, and the notice must comply with the provisions of subsection 1 of NAC 459.786.

**Sec. 81.** NAC 459.400 is hereby amended to read as follows:

459.400 As used in NAC 459.400 to 459.624, inclusive, *and sections 20 to 45, inclusive, of this regulation*, unless the context otherwise requires, the words and terms defined in NAC 459.402 to 459.546, inclusive, have the meanings ascribed to them in those sections.

**Sec. 82.** NAC 459.476 is hereby amended to read as follows:

459.476 “Portable equipment” means X-ray equipment designed *by a manufacturer* to be ~~[hand-carried.]~~ *hand-held or hand-carried.*

**Sec. 83.** NAC 459.580 is hereby amended to read as follows:

459.580 1. In addition to the provisions of NAC 459.552 to 459.558, inclusive, and 459.564, these requirements apply to X-ray equipment and associated facilities used for dental radiography. The criteria for extraoral dental radiographic systems are covered in NAC 459.616 to 459.624, inclusive.

2. X-ray systems designed for use with an intraoral image receptor must be provided with means to limit source-to-skin distance of not less than ~~18~~:

~~—(a) Eighteen]~~ *18* centimeters . ~~[if operable above 50 kilovolts peak; or~~

~~—(b) Ten centimeters if not operable above 50 kilovolts peak.]~~

3. Radiographic systems which are designed for use with an intraoral image receptor must be provided with means to limit the X-ray beam so that:

(a) If the minimum source-to-skin distance is 18 centimeters or more, the X-ray field at the minimum source-to-skin distance is containable in a circle having a diameter of no more than 7 centimeters; and

(b) If the minimum source-to-skin distance is less than 18 centimeters, the X-ray field at the minimum source-to-skin distance is containable in a circle having a diameter of no more than 6 centimeters.

4. A means must be provided to terminate the exposure at a preset time interval, a preset product of current and time, a preset number of pulses, or a preset radiation exposure to the image receptor. In addition:

(a) Termination of exposure must cause automatic resetting of the timer to its initial setting or to zero; and

(b) It must not be possible to make an exposure when the timer is set to a zero or off position if either position is provided.

5. When four timer tests taken at identical timer settings equal 0.5 seconds or less, the average time period (T) must be greater than or equal to five times the difference between the maximum period (T max) and the minimum period (T min) in accordance with the formula:  $T \geq 5(T \text{ max} - T \text{ min})$ .

6. *Deviation of measured technique factors from indicated values of kVp and exposure time must not exceed the limits specified for that system by its manufacturer. In the absence of the manufacturer's specifications, the deviation must not exceed 10 percent of the indicated value for kVp and 20 percent for exposure.* All timers must be accurate to within  $\pm 20$  percent of the selected value.

7. A control must be incorporated into each X-ray system so that an exposure can be terminated at any time, except for exposures of one-half second or less. The control switch must be of the dead-man type.

8. Each X-ray control must be located to meet the following criteria:

(a) Each installation must be provided with a protective barrier for the operator or must be so arranged that the operator can stand at least 6 feet from the patient and well away from the useful beam; and

(b) The X-ray control must provide visual indication observable at or from the operator's protected position whenever X rays are produced. In addition, a signal audible to the operator must indicate that the exposure has terminated.

9. The exposure produced must be reproducible to within the following criteria: When all technique factors are held constant, the coefficient of variation must not exceed 0.10. This requirement is met if, when four exposures at identical technique factors are made, the value of the average exposure ( $E$ ) is greater than or equal to five times the difference between the maximum exposure ( $E_{\max}$ ) and the minimum exposure ( $E_{\min}$ ) in accordance with the formula:  
$$E \geq 5 (E_{\max} - E_{\min})$$

10. Patient and film holding devices must be used when the techniques permit.

11. Neither the tube housing nor the position indicating device may be handheld during an exposure.

12. The X-ray system must be arranged and operated in such a manner that the useful beam at the patient's skin does not exceed the dimensions specified in subsection 3.

13. Dental fluoroscopy without image intensification must not be used.

14. Each patient undergoing dental radiography must be draped with a protective apron of not less than 0.25 millimeters lead-equivalent to cover the gonadal area.

*15. Dental X-ray machines with a nominal fixed kVp of less than 50 kVp must not be used to make diagnostic dental radiographs of humans.*

**Sec. 84.** NAC 459.622 is hereby amended to read as follows:

459.622 1. A means must be provided to terminate the exposure at a preset time interval, preset product of current and time, a preset number of pulses or a preset radiation exposure to the image receptor. In addition:

(a) Termination of exposure must cause automatic resetting of the timer to its initial setting or to zero; and

(b) It must not be possible to make an exposure when the timer is set to a zero or off position if either position is provided.

2. A control must be incorporated into each X-ray system so an exposure can be terminated at any time except for:

(a) Exposure of one-half second or less; or

(b) During serial radiography when means must be provided to permit completion of any single exposure of the series in process.

3. Each X-ray control must be located so that it meets the following criteria:

(a) For stationary X-ray systems, and mobile and portable X-ray systems used as stationary X-ray systems, the control must be permanently mounted in a protected area. The operator shall remain in the protected area during the entire exposure.

(b) For mobile and portable X-ray systems, the exposure switch cord must be at least 6 feet long.

(c) The X-ray control must provide visual indication observable at or from the operator's protected position whenever X rays are produced. In addition, a signal audible to the operator must indicate that the exposure has terminated.

4. When an automatic exposure control is provided:

(a) Indication must be made on the control panel when this mode of operation is selected;

(b) When the X-ray tube potential is equal to or greater than 50 kVp, the minimum exposure time for field emission equipment rated for pulsed operation must be equal to or less than a time interval equivalent to two pulses;

(c) The minimum exposure time for all equipment other than that specified in paragraph (b) ~~[of this subsection]~~ must be equal to or less than one-sixtieth of a second or a time interval required to deliver 5 mAs, whichever is greater;

(d) Either the product of peak X-ray tube potential, current, and exposure time must be limited to not more than 60 kW per exposure or the product of X-ray tube current and exposure time must be limited to not more than 600 mAs per exposure except when the X-ray tube potential is less than 50 kVp, in which case the product of X-ray tube current and exposure time must be limited to not more than 2000 mAs per exposure; and

(e) A visible signal must indicate when an exposure has been terminated at the limits described in paragraph (d), and manual resetting must be required before further automatically timed exposures can be made.

5. With a timer setting of 0.5 seconds or less, the average exposure period (T) must be greater than or equal to five times the maximum exposure period (T max) minus the minimum exposure period (T min) when four timer tests are performed, for example,  $T \geq 5(T_{\max} - T_{\min})$ .

6. *Deviation of measured technique factors from indicated values of kVp and exposure time must not exceed the limits specified for that system by its manufacturer. In the absence of the manufacturer's specifications, the deviation must not exceed 10 percent of the indicated value for kVp and 20 percent for exposure.* All timers must be accurate to within  $\pm 20$  percent of the selected value.

**Sec. 85.** NAC 459.624 is hereby amended to read as follows:

459.624 1. ~~[AHH]~~ *Except as otherwise provided in section 45 of this regulation, all* mobile or portable radiographic systems must be provided with a means to limit the source to skin distance to not less than 30 centimeters.

2. The exposure produced must be reproducible to the following criteria: When all technique factors are held constant, the coefficient of variation must not exceed 0.10. This requirement is met if, when four exposures at identical technique factors are made, the value of the average exposure (E) is greater than or equal to five times the maximum exposure (E max) minus the minimum exposure (E min) in accordance with the formula:  $E \geq 5(E_{\max} - E_{\min})$ .

3. Radiation emitted from the X-ray tube when the exposure switch or timer is not activated must not exceed a rate of 2 milliroentgens per hour at 5 centimeters from any accessible surface of the diagnostic source assembly, with the beam-limiting device fully open.

**Sec. 86.** NAC 459.737 is hereby amended to read as follows:



459.737 1. In addition to any applicable requirement of NAC 459.010 to 459.794, inclusive, *and sections 2 to 45, inclusive, of this regulation*, a person licensed by the Division to use a sealed source to engage in industrial radiography shall comply with all applicable requirements of, and may rely on all applicable exclusions or exemptions included in, the provisions of Part 34 of Title 10 of the Code of Federal Regulations, as adopted by reference in this section. *The provisions of this subsection do not apply to a person using an electronic source of radiation to conduct industrial radiography.*

2. Part 34 of Title 10 of the Code of Federal Regulations, as those provisions existed on January ~~[1, 2001,]~~ *31, 2008*, is hereby adopted by reference, subject to the following:

- (a) ~~[Except as otherwise provided in this section, any reference to “Commission’s regulations,” “federal regulations” or “NRC regulations” shall be deemed a reference to “NAC 459.010 to 459.950, inclusive”;~~
- ~~—(b) Except in 10 C.F.R. § 34.20 and as otherwise provided in this section, any reference to the “Commission” or “NRC” shall be deemed a reference to the “Division”;~~
- ~~—(c) Except as otherwise provided in this section, any reference to “NRC or an Agreement State,” “Commission or an Agreement State” or “Commission or by an Agreement State” shall be deemed a reference to “Division, Nuclear Regulatory Commission or an agreement state”;~~
- ~~—(d) Except as otherwise provided in this section, any reference to “NRC license” shall be deemed a reference to “license issued by the Division pursuant to NAC 459.010 to 459.950, inclusive”;~~
- ~~—(e) Any reference to “10 CFR part 19” or “10 CFR 19” shall be deemed a reference to “NAC 459.780 to 459.794, inclusive”;~~

- ~~—(f) Any reference to “10 CFR part 20” or “10 CFR 20” shall be deemed a reference to “NAC 459.320 to 459.374, inclusive”;~~
- ~~—(g) Any reference to “10 CFR 20.1601(a)(1)” or “§ 20.1601(a)(1)” shall be deemed a reference to “paragraph (a) of subsection 1 of NAC 459.341”;~~
- ~~—(h) Any reference to “10 CFR 20.1902” or “§ 20.1902” shall be deemed a reference to “NAC 459.3555”;~~
- ~~—(i) Any reference to “10 CFR 20.1903” or “§ 20.1903” shall be deemed a reference to “NAC 459.3565”;~~
- ~~—(j) Any reference to “10 CFR 20.2203” or “§ 20.2203” shall be deemed a reference to “NAC 459.371”;~~
- ~~—(k) The full text of a sentence that contains any reference to “10 CFR part 21” or “10 CFR 21” shall be deemed omitted;~~
- ~~—(l) The full text of a sentence that contains any reference to “10 CFR 30.7,” “§ 30.7,” “10 CFR 30.9,” “§ 30.9,” “10 CFR 30.10” or “§ 30.10” shall be deemed omitted;~~
- ~~—(m) Any reference to “10 CFR 30.33” or “§ 30.33” shall be deemed a reference to “NAC 459.238”;~~
- ~~—(n) Any reference to “10 CFR 30.50” or “§ 30.50” shall be deemed a reference to “NAC 459.373”;~~
- ~~—(o) Any reference to “10 CFR part 34” or “10 CFR 34” shall be deemed a reference to “this section”;~~
- ~~—(p) Any reference to “10 CFR 34.111” shall be deemed a reference to “NAC 459.120”;~~

~~—(q) Any reference to “10 CFR 150.20” or “§ 150.20” shall be deemed a reference to “NAC 459.210”;~~

~~—(r) In 10 C.F.R. § 34.3, any reference to “offshore platform radiography” shall be deemed a reference to “platform radiography”;~~

~~—(s) In 10 C.F.R. § 34.27(d), any reference to:~~

~~——(1) “Commission regulations” shall be deemed a reference to “NAC 459.307”; and~~

~~——(2) “Director of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555-0001” or “Administrator of the appropriate Nuclear Regulatory Commission’s Regional Office listed in appendix D of 10 CFR part 20 of this chapter ‘Standards for Protection Against Radiation’ ” shall be deemed a reference to “Division pursuant to NAC 459.307”;~~

~~—(t) In 10 C.F.R. § 34.43(a)(2), any reference to “Commission” shall be deemed a reference to “Division, Nuclear Regulatory Commission or an agreement state”;~~

~~—(u) In 10 C.F.R. § 34.89, any reference to “Agreement State” shall be deemed a reference to “Nuclear Regulatory Commission or an agreement state”;~~

~~—(v) In 10 C.F.R. § 34.101(a), any reference to “U.S. Nuclear Regulatory Commission, Division of Industrial and Medical Nuclear Safety, Washington, D.C. 20555-0001, with a copy to the Director, Office for Analysis and Evaluation of Operation Data, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555-0001,” shall be deemed a reference to “Division”;~~

~~—(w) In 10 C.F.R. § 34.101(e), any reference to “appropriate NRC regional office listed in § 30.6(a)(2) of this chapter” shall be deemed a reference to “Division”; and~~

~~—(x) In Appendix A to Part 34 of Title 10 of the Code of Federal Regulations:~~

~~—— (1) The reference in item 12 of section I to “Commission and other independent certifying organizations and/or Agreement States” shall be deemed a reference to “Division, Nuclear Regulatory Commission, other independent certifying organizations and agreement states”;~~

~~—— (2) The reference in item 1 of section II to “Agreement State regulations” shall be deemed a reference to “regulations of the Nuclear Regulatory Commission or an agreement state”; and~~

~~—— (3) The reference in item 2 of section II to “an Agreement State or a NRC licensee” shall be deemed a reference to “a person that holds a license issued pursuant to NAC 459.010 to 459.950, inclusive, by the Nuclear Regulatory Commission or an agreement state.”]~~ *The exclusion of references within 10 C.F.R. Part 34 to Part “21” and to 10 C.F.R. §§ “21.21,” “30.7,” “30.9” and “30.10”;*

*(b) The exclusion of “offshore” specified in the definition of “offshore platform radiography” set forth in 10 C.F.R. § 34.3;*

*(c) The substitution of the following wording:*

*(1) “Chapter 459 of the Nevada Administrative Code” for a reference to:*

*(I) “Commission’s regulations,” except as stated in subparagraph 6;*

*(II) “Federal regulations”;*

*(III) “NRC regulations”; and*

*(IV) “This chapter” as stated in 10 C.F.R. § 34.101(a);*

*(2) “Division” for the reference to “Commission,” except as stated in 10 C.F.R. § 34.20 and subparagraph (IV) of subparagraph 3;*

*(3) “Division, Nuclear Regulatory Commission or an agreement state” for references to:*

*(I) “NRC or an Agreement State”;*

*(II) “Commission or by an Agreement State”;*

*(III) “Commission or an Agreement State”; and*

*(IV) “Commission” in 10 C.F.R. § 34.43(a)(2);*

*(4) “License” for reference to “NRC license(s)”;*

*(5) In 10 C.F.R. § 34.27(d), “reports of test results for leaking or contaminated sealed sources shall be made pursuant to NAC 459.307” for a reference to the following statement, “A report must be filed with the Director of Nuclear Material Safety and Safeguards, by an appropriate method listed in § 30.6(a) of this chapter, the report to be filed within 5 days of any test with results that exceed the threshold in this paragraph (d), and to describe the equipment involved, the test results, and the corrective action taken. A copy of the report must be sent to the Administrator of the appropriate Nuclear Regulatory Commission’s Regional Office listed in appendix D of 10 C.F.R. part 20 of this chapter ‘Standards for Protection Against Radiation.’”;*

*(6) In 10 C.F.R. § 34.27(d), “subsection 3 of NAC 459.307” for the reference to “Commission regulations”;*

*(7) In 10 C.F.R. § 34.43(a)(1), “10 C.F.R. § 30.6” for the reference to “§ 30.6(a) of this chapter”;*

*(8) In 10 C.F.R. § 34.89, “a Nuclear Regulatory Commission or an agreement state” for the reference to “the Agreement State”;*

*(9) In 10 C.F.R. § 34.101(a), “Division” for the reference to “NRC’s Office of Federal and State Materials and Environmental Management Programs, by an appropriate method listed in § 30.6(a) of this chapter”;*

*(10) In 10 C.F.R. § 34.101(c), “Division” for the reference to “appropriate NRC regional office listed in § 30.6(a)(2) of this chapter”;*

*(11) In Item 12, Section I of Appendix A to 10 C.F.R. Part 34, “Division, the United States Nuclear Regulatory Commission and other independent certifying organizations or agreement states” for the reference to “Commission and other independent certifying organizations and/or Agreement States”;*

*(12) In Item 1, Section II of Appendix A to 10 C.F.R. Part 34, “equivalent Nuclear Regulatory Commission or agreement state regulations” for the reference to “equivalent Agreement State regulations”; and*

*(13) In Item 2(c), Section II of Appendix A to 10 C.F.R. Part 34, “a Nevada, Nuclear Regulatory Commission or an agreement state licensee” for the reference to “an Agreement State or a NRC licensee”; and*

*(d) The substitution of the following:*

- (1) “Subsection 1 of NAC 459.120” for the reference to “10 CFR 34.111”;*
- (2) “NAC 459.320 to 459.374, inclusive,” for the reference to “10 CFR 20”;*
- (3) “Paragraph (a) of subsection 1 of NAC 459.341” for the reference to “10 CFR 20.1601(a)(1)”;*
- (4) “Subsections 1 and 2 of NAC 459.3555” for the reference to “10 CFR 20.1902(a) and (b)”;*

- (5) “NAC 459.3565” for the reference to “10 CFR 20.1903”;
- (6) “NAC 459.371” for the reference to “10 CFR 20.2203”;
- (7) “NAC 459.780 to 459.794, inclusive,” for the reference to “10 CFR 19”;
- (8) “NAC 459.210” for the reference to “10 CFR 150.20”;
- (9) “NAC 459.373” for the reference to “§ 30.50”;
- (10) “NAC 459.238” for the reference to “10 CFR 30.33”; and
- (11) “NAC 459.737” for the reference to “10 CFR 34.”

3. The following sections of Part 34 of Title 10 of the Code of Federal Regulations, as those provisions existed on January ~~1, 2001,~~ *31, 2008*, are not adopted by reference:

- (a) Section 34.1;
- (b) Section 34.5;
- (c) Section 34.8;
- (d) Section 34.11;
- (e) Section 34.45(a)(9);
- (f) Section 34.121; and
- (g) Section 34.123.

4. A copy of a publication that contains Part 34 of Title 10 of the Code of Federal Regulations may be obtained *by mail* from the Superintendent of Documents, United States Government Printing Office, ~~Washington, D.C. 20402,~~ *P.O. Box 979050, St. Louis, Missouri 63197-9000, or by toll-free telephone at (866) 512-1800*, at the price of ~~[\$55.]~~ *\$67, or free of charge at the Internet address <http://www.gpoaccess.gov/cfr/index.html>.*

**Sec. 87.** NAC 459.786 is hereby amended to read as follows:

459.786 1. Data concerning a person's exposure to radiation and the results of any measurements, analyses and calculations of radioactive material deposited or retained in the body of a person must be reported to him, as specified in this section. The information reported must include data and results obtained pursuant to NAC 459.010 to 459.794, inclusive, *and sections 2 to 45, inclusive, of this regulation*, orders or conditions set forth in the license or registration, as shown in records maintained by the licensee or registrant pursuant to those sections. Each notification and report must:

- (a) Be in writing;
- (b) Include the name of the registrant or licensee, the name of the person and his social security number;
- (c) Include the information relating to the person's exposure; and
- (d) Contain the following statement:

This report is furnished to you pursuant to NAC 459.780 to 459.794, inclusive, adopted by the State Board of Health. You should preserve this report for further reference.

2. Each licensee and registrant shall advise each of its workers annually of their exposure to radiation or radioactive material as shown in records maintained by the licensee or registrant pursuant to NAC 459.3665. *An annual report of the exposure in that monitoring year must be provided to each person monitored pursuant to NAC 459.339 if:*

*(a) The person's occupational dose exceeds 1 mSv (100 mrem) total effective dose equivalent or 1 mSv (100 mrem) to any individual organ or tissue; or*



*(b) The person requests his or her annual dose report.*

3. At the request of a worker formerly engaged in work controlled by the licensee or the registrant, the licensee or registrant shall furnish to the worker a report of his exposure to radiation or radioactive material. The report must be furnished within 30 days after the time the request is made or within 30 days after his exposure has been determined, whichever is later. The report must cover, within the period specified in the request, each calendar quarter in which the worker's activities involved exposure to radiation from radioactive material licensed by or radiation machines registered with the Division and must include the dates and locations of work under the license or registration in which the worker participated during this period.

4. When a licensee or registrant is required pursuant to NAC 459.3695 , *459.371 or 459.3715* to report to the Division any exposure of a person to radiation or radioactive material, the licensee or registrant shall also provide the person with a report on his exposure data. The report to the person must be transmitted to him before transmittal of the report to the Division.

5. At the request of a worker who is terminating employment with a licensee or registrant in work involving exposure to radiation in a calendar quarter or of a worker who, while employed by another person, is terminating an assignment to work involving exposure to radiation in the licensee's or registrant's facility in a calendar quarter, the licensee or registrant shall provide the worker at the time of the termination a written report specifying the dose of radiation which he received from the operations of the licensee or registrant during the calendar quarter or fraction thereof or shall provide him a written estimate of that dose if the results of personnel monitoring have not been finally determined and are not available at that time. An estimated dose must be clearly indicated as such.

**Sec. 88.** NAC 459.014, 459.2434, 459.2565, 459.3064, 459.3066 and 459.3068 and Section 9 of LCB File No. R149-07 are hereby repealed.

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**TEXT OF REPEALED SECTIONS**

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**459.014 “Accelerator produced material” defined.** “Accelerator produced material” means any material made radioactive by exposing it in a particle accelerator.

**459.2434 Specific licenses: Application, amendment or renewal of license for medical use of radioactive material.**

1. An application for a license for medical use of radioactive material must be made by submitting an original and one copy of NRC Form 5 to the Division. NRC Form 5 and its instructions may be obtained at no charge from the Division.

2. An application for amendment to a license or renewal of a license for medical use of radioactive material must be made by submitting an original and one copy of a letter of request to the Division.

**459.2565 Specific licenses: Use of sealed sources for diagnosis.**

1. A licensee may use the following sealed sources for diagnosis in accordance with the radiation safety and handling instructions of the manufacturer:

(a) Iodine-125, americium-241 and gadolinium-153 in a device for bone mineral analysis;  
and

(b) Iodine-125 in a portable imaging device.

2. A licensee who uses radioactive material as a sealed source for diagnosis shall have in his possession a portable radiation detection survey instrument capable of:

(a) Detecting dose rates that range from 0.1 millirem per hour to 100 millirem per hour; or

(b) Measuring dose rates that range from 1 millirem per hour to 1000 millirem per hour.

**459.3064 Written attestations not required for authorized users who have license issued by Nuclear Regulatory Commission or agreement state.** The written attestations described in 10 C.F.R. §§ 35.14(a), 35.50(d), 35.51(b)(2), 35.55(b)(2), 35.190(c)(2), 35.290(c)(2), 35.390(b)(2), 35.392(c)(3), 35.394(c)(3), 35.396(d)(3), 35.490(b)(3), 35.491(b)(3) and 35.690(b)(3) are not required for authorized users who have been named on a radioactive material license issued by the Nuclear Regulatory Commission or an agreement state before November 13, 2006.

**459.3066 Satisfaction of training requirements for radiation safety officer, authorized medical physicist, authorized nuclear pharmacist or authorized user.**

1. Before April 29, 2008, a licensee shall satisfy the training requirements for a radiation safety officer, an authorized medical physicist, an authorized nuclear pharmacist or an authorized user by complying with:

(a) The appropriate provisions of 10 C.F.R. Part 35, Subpart J; or

(b) The appropriate provisions of 10 C.F.R. Part 35, Subpart B or Subparts D to H, inclusive.

2. On or after April 29, 2008, a licensee shall satisfy the training requirements for a radiation safety officer, an authorized medical physicist, an authorized nuclear pharmacist or an authorized user by complying with the provisions of 10 C.F.R. Part 35, Subpart B or Subparts D to H, inclusive.

**459.3068 Additional requirements for persons registered to use sealed source to engage in medical use.** Except as otherwise provided in NAC 459.3064 and 459.3066, in addition to any applicable requirement of NAC 459.010 to 459.794, inclusive, a person registered with the Division to use a sealed source to engage in medical use of a radioactive material shall comply with all applicable requirements of, and may rely on all applicable exclusions or exemptions included in, the provisions of 10 C.F.R. Part 35, as adopted by reference pursuant to NAC 459.3062.

#### **Section 9 of LCB File No. R149-07**

Sec. 9. The provisions of 10 C.F.R. Part 71, as those provisions existed on January 26, 2004, are hereby adopted by reference, subject to the following:

1. “Byproduct material” as described in 10 C.F.R. § 71.4 shall be deemed to include naturally occurring and accelerator-produced radioactive material.
2. The provisions of 10 C.F.R. §§ 71.6, 71.65 and 71.100 are not adopted by reference.
3. The references in 10 C.F.R. §§ 71.9(e)(1) and 71.9(e)(2) to “NRC Form 3” shall be deemed to be references to Form NRC-1, “Notice to Employees.”
4. The reference in 10 C.F.R. § 71.9(e)(1) to “§ 19.11(c)” shall be deemed to be a reference to “subsection 3 of NAC 459.782.”

5. The provisions of 10 C.F.R. § 71.9(f) are not adopted by reference.

6. Any reference to “licensee,” “applicant,” “applicant for a license,” “NRC licensee,” “NRC applicant,” “Commission licensee,” “Commission applicant” or “licensee of the Commission” shall be deemed to be a reference to “licensee of the Division” or “applicant for a license issued by the Division,” except that the references in 10 C.F.R. § 71.37 to “the applicant” refer to an applicant to the Nuclear Regulatory Commission. Any reference to “license,” “NRC license,” “Commission license” or “license issued by the Commission” shall be deemed to be a reference to “license issued by the Division.”

7. Any reference to “the Commission,” “the Nuclear Regulatory Commission” or “the NRC” shall be deemed to be a reference to “the Division,” except that any reference to “the Commission,” “the Nuclear Regulatory Commission” or “the NRC” described in paragraphs (a) to (v), inclusive, shall not be deemed to be a reference to the Division:

- (a) 10 C.F.R. §§ 71.0(a)(2), 71.0(d)(1) and 71.0(g);
- (b) 10 C.F.R. § 71.1(a);
- (c) 10 C.F.R. § 71.4, definition of “certificate holder”;
- (d) 10 C.F.R. § 71.4(3);
- (e) 10 C.F.R. § 71.8(b)(2);
- (f) 10 C.F.R. § 71.10;
- (g) 10 C.F.R. § 71.12;
- (h) The reference in 10 C.F.R. § 71.17(a) to “the NRC”;
- (i) The reference in 10 C.F.R. § 71.17(b) to “the Commission”;
- (j) 10 C.F.R. § 71.17(c)(3);

- (k) 10 C.F.R. § 71.17(e);
  - (l) 10 C.F.R. §§ 71.19(a), 71.19(c), 71.19(d) and 71.19(e);
  - (m) The reference in 10 C.F.R. § 71.23(b) to “the Commission”;
  - (n) 10 C.F.R. § 71.38(b);
  - (o) 10 C.F.R. § 71.39;
  - (p) 10 C.F.R. §§ 71.41(a), 71.41(b) and 71.41(c);
  - (q) 10 C.F.R. § 71.55(c);
  - (r) The reference in 10 C.F.R. § 71.85(c) to “the Commission”;
  - (s) The reference in 10 C.F.R. § 71.93(c) to “the NRC”;
  - (t) The reference in 10 C.F.R. § 71.95(a)(1) to “the NRC”;
  - (u) 10 C.F.R. § 71.99; and
  - (v) 10 C.F.R. § 71.101(g).
8. The provisions of 10 C.F.R. § 71.100 are not adopted by reference.