PROPOSED REGULATION OF THE

STATE BOARD OF HEALTH

LCB File No. R085-06

August 10, 2006

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

AUTHORITY: §§1-28, 31-35, 37, 39, 41, 42, 44, 45, 51, 53-55, 57, 58, 61-65, 71, 72, 74-76 and 78, NRS 459.201; §§29, 30, 38, 40, 43, 48-50, 52, 56, 59, 60, 66, 67, 70, 73, 77 and 79, NRS 459.030 and 459.201; §§36, 68 and 69, NRS 459.030; §46, NRS 439.030, 459.060 and 459.201; §47, NRS 439.150 and 459.201.

A REGULATION relating to radioactive materials; revising the provisions relating to general and specific licenses issued by the Health Division of the Department of Health and Human Services, the Nuclear Regulatory Commission or an agreement state to persons who transfer or possess certain radioactive devices; revising certain provisions concerning the labeling of radioactive devices; revising certain provisions concerning radioactive drugs and nuclear pharmacists; revising certain provisions regarding the decommissioning of radioactive devices; adopting by reference certain provisions of 10 C.F.R. Part 35 relating to licensing of radioactive devices; defining certain types of respirators and respiratory protective devices; revising provisions concerning the testing of respirators and respiratory protective devices; repealing certain provisions concerning the registration, licensing and control of radioactive materials; 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 28, inclusive, of this regulation.

Sec. 2. ***"Appendix G" means Appendix G to 10 C.F.R. §§ 20.1001 to 20.2402, inclusive, as those provisions existed on November 16, 2005.***

Sec. 3. ***"Assigned protection factor" means the expected level of respiratory protection in a workplace that would be provided by a properly functioning respirator or class of respirators to properly fitted and trained users. Operationally, the inhaled concentration can be estimated by dividing the ambient airborne concentration by the assigned protection factor.***

Sec. 4. *"Atmosphere-supplying respirator" means a respirator that supplies the user with breathing air from a source independent of the ambient atmosphere, and includes, without limitation, a supplied-air respirator and a self-contained breathing apparatus unit.*

Sec. 5. *"Constraint" means a value above which specified licensee actions are required.*

Sec. 6. *"Demand respirator" means an atmosphere-supplying respirator that admits breathing air to the facepiece only when a negative pressure is created inside the facepiece by inhalation.*

Sec. 7. *"Fit factor" means a quantitative estimate of the fit of a particular respirator to a specific person, and typically includes an estimate of the ratio of the concentration of a substance in ambient air to its concentration inside the respirator when worn.*

Sec. 8. *"Fit test" means the use of a protocol which involves a qualitative fit test or quantitative fit test to evaluate the fit of a respirator on a person.*

Sec. 9. *"Negative pressure respirator" means a respirator in which the air pressure inside the facepiece is negative during inhalation with respect to the ambient air pressure outside the respirator.*

Sec. 10. *"Positive pressure respirator" means a respirator in which the pressure inside the respiratory inlet covering exceeds the ambient air pressure outside the respirator.*

Sec. 11. *"Pressure demand respirator" means a positive pressure atmosphere-supplying respirator that admits breathing air to the facepiece when the positive pressure is reduced inside the facepiece by inhalation.*

Sec. 12. *"Qualitative fit test" means a fit test that relies on the response of a person to the test agent to assess on a pass or fail basis the adequacy of the fit of a respirator.*

Sec. 13. *"Quantitative fit test" means a fit test that relies on numerically measuring the amount of leakage into a respirator to assess the adequacy of the fit of the respirator.*

Sec. 14. *"Self-contained breathing apparatus" means an atmosphere-supplying respirator for which the breathing air source is designed to be carried by the user.*

Sec. 15. *"Supplied-air respirator" means an atmosphere-supplying respirator for which the source of breathing air is not designed to be carried by the user, and includes, without limitation, an airline respirator.*

Sec. 16. *"Tight-fitting facepiece" means a respiratory inlet covering that forms a complete seal with the face.*

Sec. 17. *"User-performed seal check" means an action conducted by the user of a respirator to determine if the respirator is properly seated to the face. The term includes, without limitation, a negative pressure check, a positive pressure check, an irritant smoke check and an isoamyl acetate check.*

Sec. 18. *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 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 the effective date of this regulation must comply with the provisions of NAC 459.282 concerning the labeling of the device.

Sec. 19. *If a person licensed pursuant to NAC 459.282 is required to provide notice of a bankruptcy proceeding pursuant to subsection 3 of NAC 459.198, the licensee shall, upon request of the Division, the Nuclear Regulatory Commission or the equivalent agency of an agreement state, provide a record of the final disposition of the bankruptcy proceeding to the requesting agency.*

Sec. 20. *1. A person who is licensed pursuant to NAC 459.282 to transfer devices containing radioactive material initially to a person who has been issued a general license pursuant to NAC 459.216 or who received such a device from a person who has been issued a general license pursuant to NAC 459.216 shall, in accordance with the provisions of NAC 459.134, report to the Division each such transfer and receipt of devices containing radioactive material.*

2. The report required pursuant to subsection 1 must:

(a) Cover each calendar quarter;

(b) Be filed within 30 days after each calendar quarter;

(c) Clearly indicate the calendar quarter covered by the report;

(d) Clearly identify the licensee submitting the report and include the license number of the licensee;

(e) If the person making the report transferred a device containing radioactive material to a general licensee, be submitted on Nuclear Regulatory Commission Form 653, Transfers of Industrial Devices Report (To General Licensees), or in a clear and legible report containing all the data required on Form 653, including, without limitation:

(1) The identity of each general licensee who received such a device, by name and mailing address for the location of use of the device or, if there is no mailing address for the location of use, an alternate address for the general licensee and a description of the location of use;

(2) The name, title and telephone number of the person identified by the general licensee as having knowledge of and authority to take required actions to ensure compliance with the appropriate regulations and requirements;

(3) The date of the transfer;

(4) The type, model number and serial number of the device transferred; and

(5) The quantity and type of radioactive material contained in the device transferred;

(f) If one or more intermediate persons will temporarily possess the device at the intended place of use before the intended user takes possession of the device, include the information required in this subsection for each intermediate person and must clearly designate each intermediate person;

(g) If the person making the report received a device containing radioactive material from a general licensee, include, without limitation:

(1) The name and address of the general licensee;

(2) The type, model number and serial number of the device received;

(3) The date of receipt; and

(4) In the case of devices not initially transferred by the person required to make the report, the name of the manufacturer or initial transferor of the device; and

(h) If, during the calendar quarter, no transfers have been made to or from a general licensee who is licensed pursuant to NAC 459.216, indicate that no transfers were made during the calendar quarter.

3. If a person required to make a report pursuant to this section makes a change to a device possessed by a general licensee who is licensed pursuant to NAC 459.216, such that the label must be changed to update required information, the report described in subsection 2, in addition to all other requirements of this section, must:

(a) Identify, by name and address, the general licensee and the person who possesses the device;

(b) Identify the device by type, model number and serial number; and

(c) Note the changes to the information on the label of the device.

4. A person required to make a report pursuant to this section shall maintain all information concerning transfers and receipts of devices containing radioactive material that supports the report for at least 3 years following the date of the recorded event.

5. If a license of a person required to make a report pursuant to this section is to be terminated for any reason, the licensee shall, upon request, provide the information described in subsection 4 to the Division.

Sec. 21. *1. A person who is licensed pursuant to NAC 459.282 to transfer devices containing radioactive material initially to a person who has been issued a general license by the Nuclear Regulatory Commission or an agreement state or who received such a device from a person who has been issued a general license by the Nuclear Regulatory Commission or an agreement state shall report those transfers and receipts of devices containing radioactive material to the Nuclear Regulatory Commission or appropriate regulatory agency of the agreement state.*

2. The report required pursuant to subsection 1 must:

(a) Cover each calendar quarter;

(b) Be filed within 30 days after each calendar quarter;

(c) Clearly indicate the calendar quarter covered by the report;

(d) Clearly identify the licensee submitting the report and include the license number of the licensee;

(e) If the person making the report transferred a device containing radioactive material to a general licensee, be submitted on Nuclear Regulatory Commission Form 653, Transfers of Industrial Devices Report (To General Licensee), or in a clear and legible report containing all the data required by Form 653, including, without limitation:

(1) The identity of each general licensee who holds a general license issued by the Nuclear Regulatory Commission or an agreement state and who received such a device, by name and mailing address for the location of use or, if there is no mailing address for the

location of use, an alternate address for the general licensee and a description of the location of use;

(2) The name, title and telephone number of the person identified by the general licensee as having knowledge of and authority to take required actions to ensure compliance with the appropriate regulations and requirements;

(3) The date of the transfer;

(4) The type, model number and serial number of the device transferred; and

(5) The quantity and type of radioactive material contained in the device transferred;

(f) If one or more intermediate persons will temporarily possess the device at the intended place of use before the intended user takes possession of the device, include the information required in this subsection for each intermediate person and must clearly designate each intermediate person;

(g) If the person making the report received a device containing radioactive material from a general licensee, include:

(1) The name and address of the general licensee;

(2) The type, model number and serial number of the device received;

(3) The date of receipt; and

(4) In the case of devices not initially transferred by the person required to make the report, the name of the manufacturer or initial transferor of the device; and

(h) If, during the calendar quarter, no transfers have been made to or from a general licensee who is licensed by the Nuclear Regulatory Commission or an agreement state, upon request from the Nuclear Regulatory Commission or agreement state, indicate that no transfers were made during the calendar quarter.

3. If a person required to make a report pursuant to this section makes a change to a device possessed by a person who holds a general license issued by the Nuclear Regulatory Commission or an agreement state, such that the label must be changed to update required information, the report described in subsection 2, in addition to all other requirements of this section, must:

(a) Identify, by name and address, the general licensee and the person who possesses the device;

(b) Identify the device by type, model number and serial number; and

(c) Note the changes to the information on the label of the device.

4. A person required to make a report pursuant to this section shall maintain all information concerning transfers and receipts of devices containing radioactive material that supports the report for at least 3 years following the date of the recorded event.

5. If a license of a person required to make a report pursuant to this section is to be terminated for any reason, the licensee shall, upon request, provide the information described in subsection 4 to the Nuclear Regulatory Commission or the equivalent agency of an agreement state.

Sec. 22. *1. A licensee who ships radioactive waste intended for ultimate disposal at a licensed land disposal facility must document the information required on Nuclear Regulatory Commission Form 541, 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.

Sec. 23. *Except as otherwise provided in sections 25 and 26 of this regulation, in addition to any applicable requirement of NAC 459.010 to 459.794, inclusive, and sections 2 to 28, inclusive, of this regulation, 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 section 24 of this regulation.*

Sec. 24. *1. The provisions of 10 C.F.R. Part 35, as they existed on September 16, 2004, are hereby adopted by reference, subject to the following:*

(a) 10 C.F.R. §§ 35.8, 35.4001 and 35.4002 are not adopted by reference.

(b) Except as otherwise provided in this chapter, the implementation date described in 10 C.F.R. §§ 35.10(a) and 35.10(d) is the effective date of this regulation.

(c) Except as otherwise provided in this chapter, the October 24, 2002, date described in 10 C.F.R. § 35.57(a)(1) shall be deemed to mean the effective date of this regulation.

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

(1) "10 C.F.R. Part 19" or "10 C.F.R. 19" shall be deemed to mean "NAC 459.780 to 459.794, inclusive."

(2) "10 C.F.R. 19.12" or "§ 19.12" shall be deemed to mean "NAC 459.784."

(3) "10 C.F.R. Part 20" or "10 C.F.R. 20" shall be deemed to mean "NAC 459.320 to 459.374, inclusive."

(4) "10 C.F.R. 20.1101" or "§ 20.1101" shall be deemed to mean "paragraph (a) of subsection 1 of NAC 459.321."

(5) "10 C.F.R. 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 C.F.R. 20.1301(c)" or "§ 20.1301(c)" shall be deemed to mean "paragraph (c) of subsection 1 of NAC 459.335."

(7) "10 C.F.R. 20.1501" or "§ 20.1501" shall be deemed to mean "NAC 459.337."

(8) "10 C.F.R. Part 30" or "10 C.F.R. 30" shall be deemed to mean "NAC 459.180 to 459.314, inclusive, and sections 18 to 28, inclusive, of this regulation."

(9) "10 C.F.R. 30.34(b)" or "§ 30.34(b)" shall be deemed to mean "subsection 2 of NAC 459.198."

(10) "10 C.F.R. 30.6" or "§ 30.6" shall be deemed to mean "NAC 459.134."

(11) "10 C.F.R. 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 C.F.R. Part 33" or "10 C.F.R. 33" shall be deemed to mean "NAC 459.262 to 459.274, inclusive."

(13) "10 C.F.R. 33.13" or "§ 33.13" shall be deemed to mean "NAC 459.268."

(14) "10 C.F.R. 71," "10 C.F.R. Part 71," "10 C.F.R. 71.5," "§ 71.5," or "49 C.F.R. Parts 171-173" shall be deemed to mean "NAC 459.314."

(15) "10 C.F.R. Part 170," "10 C.F.R. 170," "10 C.F.R. Part 171" or "10 C.F.R. 171" shall be deemed to mean "NAC 459.310."

(16) "Byproduct material" shall be deemed a reference to "radioactive material."

(17) "Commission" or "NRC" shall be deemed a reference to "Division."

(18) "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 28, inclusive, of this regulation."

(19) "NRC Form 313" shall be deemed a reference to "NRC Form 5 'Application for Radioactive Material License' described in NAC 459.2434."

(20) "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 28, inclusive, of this regulation."

(21) "NRC Operations Center" 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."

(22) "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."

(e) The full text of any sentence that contains a reference to "10 C.F.R. Part 21," "10 C.F.R. 21," "10 C.F.R. 30.7," "§ 30.7," "10 C.F.R. 30.9," "§ 30.9," "10 C.F.R. 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 from the Superintendent of Documents, United States Government Printing Office, Washington, D.C. 20402-9325, at a cost of $61, or free of charge at the Internet address http://www.gpoaccess.gov/cfr/index.html.

Sec. 25. ***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 the effective date of this regulation.

Sec. 26. *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.

Sec. 27. *1. A manufacturer or initial distributor of a sealed source or device containing a sealed source whose product is intended for use under a specific license may submit a request to the Nuclear Regulatory Commission or an agreement state for evaluation of the radiation safety information concerning its product and for registration of the product.*

2. A request for review submitted pursuant to subsection 1 must be sent to the Office of Nuclear Material Safety and Safeguards of the United States Nuclear Regulatory Commission by a method listed in 10 C.F.R. § 30.6(a) or to the equivalent agency of an agreement state.

3. A request for review of a sealed source submitted pursuant to subsection 1 must include, without limitation, sufficient information concerning the:

(a) Design of the sealed source;

(b) Manufacture of the sealed source;

(c) Prototype testing of the sealed source;

(d) Quality control program proposed for the sealed source;

(e) Labeling of the sealed source;

(f) Proposed uses of the sealed source; and

(g) Leak testing of the source,

➥ to provide reasonable assurance that the radiation safety properties of the sealed source are adequate to protect health and minimize the danger to life and property.

4. A request for review of a device containing a sealed source submitted pursuant to subsection 1 must include, without limitation, sufficient information concerning the:

(a) Design of the device;

(b) Manufacture of the device;

(c) Prototype testing of the device;

(d) Quality control program proposed for the device;

(e) Labeling of the device;

(f) Proposed uses of the device;

(g) Leak testing of the device;

(h) Installation of the device;

(i) Service and maintenance of the device;

(j) Operating and safety instructions concerning the device; and

(k) Potential hazards associated with the device,

➥ to provide reasonable assurance that the radiation safety properties of the device are adequate to protect health and minimize the danger to life and property.

5. If the Nuclear Regulatory Commission or agreement state completes an evaluation pursuant to a request made pursuant to subsection 1 and issues a certificate of registration to the manufacturer or initial distributor of a sealed source or device containing a sealed source who made the request pursuant to subsection 1, the manufacturer or initial distributor shall manufacture and distribute the product in accordance with:

(a) The statements and representations, including, without limitation, the quality control program, contained in the request submitted pursuant to subsection 1; and

(b) The provisions of the certificate of registration.

Sec. 28. ***Each address for a location of use described in subparagraph (5) of paragraph (b) of subsection 12 of NAC 459.218 is deemed to represent a separate general license and requires separate registration and payment of a separate fee.***

Sec. 29. 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 28, inclusive, of this regulation,*** unless the context otherwise requires, the words and terms defined in NAC 459.012 to ~~[459.1165,]~~ ***459.116,*** inclusive, ***and sections 2 to 17, inclusive, of this regulation*** have the meanings ascribed to them in those sections.

Sec. 30. NAC 459.0145 is hereby amended to read as follows:

459.0145 "Activity" means the rate of disintegration or decay of radioactive material. The units of activity are the curie and the ~~[becquerel.]~~ ***becquerel.***

Sec. 31. NAC 459.019 is hereby amended to read as follows:

459.019 "Appendix A" means Appendix A to 10 C.F.R. §§ 20.1001 to 20.2402, inclusive, as those provisions existed on ~~[January 1, 1993.]~~ ***October 13, 1999.***

Sec. 32. 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 ~~[January 1, 1993.]~~ ***October 13, 1999.***

Sec. 33. NAC 459.0194 is hereby amended to read as follows:

459.0194 "Appendix C" means Appendix C to 10 C.F.R. §§ 20.1001 to 20.2402, inclusive, as those provisions existed on ~~[January 1, 1993.]~~ ***October 13, 1999.***

Sec. 34. NAC 459.0207 is hereby amended to read as follows:

459.0207 "Authorized nuclear pharmacist" ~~[means a person who meets the requirements set forth in subsection 1 of NAC 459.3961.]~~ ***has the meaning ascribed to it in 10 C.F.R. § 35.2, as adopted by reference pursuant to section 24 of this regulation.***

Sec. 35. NAC 459.0208 is hereby amended to read as follows:

459.0208 "Authorized user" ~~[means a person who meets the requirements set forth in NAC 459.3944 to 459.3966, inclusive, as applicable.]~~ ***has the meaning ascribed to it in 10 C.F.R. § 35.2, as adopted by reference pursuant to section 24 of this regulation.***

Sec. 36. NAC 459.0212 is hereby amended to read as follows:

459.0212 ~~[~~"Bequerel"~~]~~ ***"Becquerel"*** means a unit of measurement of radioactivity. One ~~[~~bequerel~~]~~ ***becquerel*** is that quantity of radioactive material which decays at the rate of one disintegration per second. One ~~[~~bequerel~~]~~ ***becquerel*** is equivalent to 2.7×10^{-11} curie.

Sec. 37. NAC 459.0218 is hereby amended to read as follows:

459.0218 "Brachytherapy source" ~~[means an individual sealed source or a manufacturer-assembled source train that is not designed to be disassembled by the user.]~~ ***has the meaning ascribed to it in 10 C.F.R. § 35.2, as adopted by reference pursuant to section 24 of this regulation.***

Sec. 38. NAC 459.026 is hereby amended to read as follows:

459.026 “Curie” means a unit of measurement of radioactivity. One curie (Ci) is that quantity of radioactive material which decays at the rate of 3.7 x 10^{10} disintegrations per second (dps). One curie is equivalent to 37 ~~[kilobequerels.]~~ ***kilobecquerels.***

Sec. 39. NAC 459.0508 is hereby amended to read as follows:

459.0508 “Medical use of radioactive material” or “medical use” means the intentional internal or external administration of:

1. Licensed radioactive material or radiation therefrom ~~[,]~~ ***, as described in 10 C.F.R. Part 35;*** or

2. Radiation from a machine that produces radiation,

➥ to patients or human research subjects under the supervision of an authorized user.

Sec. 40. NAC 459.054 is hereby amended to read as follows:

459.054 “Occupational dose” means the dose received by a natural person in the course of employment in which the natural person’s duties involve exposure to radiation or radioactive material from licensed and unlicensed sources of radiation, whether in the possession of a licensee or registrant or any other person. The term does not include a dose received by a natural person:

1. From background radiation;

2. From any medical administration of radiation to the person;

3. From exposure to other natural persons who have been administered ~~[radiopharmaceuticals or have received permanent implants containing]~~ radioactive material and have been released ~~[from the control of a licensee]~~ pursuant to ~~[NAC 459.256;]~~ ***10 C.F.R. § 35.75;***

4. From voluntary participation in medical research; or

5. As a member of the public.

Sec. 41. NAC 459.062 is hereby amended to read as follows:

459.062 "Pharmacist" ~~[means a person who holds a certificate of registration pursuant to chapter 639 of NRS.]~~ ***has the meaning ascribed to it in 10 C.F.R. § 35.2, as adopted by reference pursuant to section 24 of this regulation.***

Sec. 42. NAC 459.064 is hereby amended to read as follows:

459.064 "Physician" has the meaning ascribed to it in ~~[NRS 630.014.]~~ ***10 C.F.R. § 35.2, as adopted by reference pursuant to section 24 of this regulation.***

Sec. 43. NAC 459.065 is hereby amended to read as follows:

459.065 "Public dose" means the dose received by a member of the public from exposure to radiation or radioactive material that is released by a licensee, or from another source of radiation under the control of a licensee or registrant. The term does not include a dose received by a natural person from:

1. Background radiation;

2. Any medical administration of radiation to the person;

3. Exposure to other natural persons who have been administered ~~[radiopharmaceuticals or have received permanent implants containing]~~ radioactive material and have been released ~~[from the control of a licensee]~~ pursuant to ~~[NAC 459.256; or]~~ ***10 C.F.R. § 35.75;***

4. ***An occupational dose; or***

5. Voluntary participation in medical research.

Sec. 44. NAC 459.074 is hereby amended to read as follows:

459.074 "Radiation safety officer" ~~[means a person who has the knowledge and responsibility to apply appropriate regulations for protection against radiation.]~~ ***has the meaning***

ascribed to it in 10 C.F.R. § 35.2, as adopted by reference pursuant to section 24 of this regulation.

Sec. 45. NAC 459.095 is hereby amended to read as follows:

459.095 "Shallow-dose equivalent" means the dose equivalent to the skin ***of the whole body*** or ***the skin of*** an extremity that is measured at a ***tissue*** depth of 0.007 centimeter ~~[and averaged over an area of 1 square centimeter.]~~ ***(7 mg/cm^2).***

Sec. 46. NAC 459.124 is hereby amended to read as follows:

459.124 1. In addition to other records required by NAC 459.010 to 459.950, inclusive, ***and sections 2 to 28, inclusive, of this regulation,*** each licensee and registrant shall maintain records showing his receipt, transfer and disposal of all sources of radiation.

2. A licensee authorized to possess, in an unsealed form, radioactive material with a half-life greater than 120 days shall:

(a) Before his license terminates, forward to the Division:

(1) All records of licensed radioactive material disposed of by the licensee pursuant to NAC 459.3595 to 459.3615, inclusive, including burials authorized before January 28, 1981; and

(2) All records required by paragraph (d) of subsection 2 of NAC 459.3645; and

(b) If the licensee transfers or assigns any licensed activities to another licensee, transfer to the other licensee:

(1) All records of licensed material disposed of by the licensee pursuant to NAC 459.3595 to 459.3615, inclusive, including burials authorized before January 28, 1981; and

(2) All records required by paragraph (d) of subsection 2 of NAC 459.3645.

3. A licensee to whom records are transferred pursuant to paragraph (b) of subsection 2 shall maintain the records until the termination of his license.

4. A licensee whose license is being terminated shall, before his license terminates, forward to the Division the records required by subsection ~~[10]~~ ***12*** of NAC 459.1955.

Sec. 47. NAC 459.161 is hereby amended to read as follows:

459.161 1. An application for the registration of a radiation machine submitted pursuant to NAC 459.154 must be accompanied by a nonrefundable fee for each X-ray tube or electron source which is installed in the radiation machine, as follows:

(a) Medical use, other than mammography, $250.

(b) Veterinary use, $75.

(c) Dental use, $70.

(d) Industrial use, $100.

(e) Academic use, $75.

(f) Accelerator, $275.

2. Except as otherwise provided in subsection 3, if the Division issues a registration certificate pursuant to NAC 459.156, the registrant must, for each year the certificate is valid, submit to the Division a nonrefundable renewal fee in an amount equal to the appropriate fee set forth in subsection 1.

3. The renewal fee must be received by the Division not later than the date on which the registration expires. If the fee is not received by that date, the registrant must:

(a) Stop operating the radiation machine which does not have a valid registration on or before the date the registration expires; or

(b) Submit to the Division within 5 days after the registration expires:

(1) An application for renewal of the registration;

(2) A fee in an amount that is equal to the appropriate fee set forth in subsection 1; and

(3) A fee for late payment of $50 ~~[. During the 12-month period following the renewal of registration, the registrant will be required to pay only one fee for late payment for the facility where the radiation machine is located, regardless of the number of X-ray tubes or electron sources which are installed in the radiation machines located at that facility whose registration is not renewed within the prescribed period.]~~ ***per registration.***

4. Any application for registration or renewal of registration which is not accompanied by the appropriate fees will not be acted upon by the Division until such fees are paid.

5. An application for a certificate of authorization for a radiation machine must be accompanied by a nonrefundable fee for each machine as required pursuant to NAC 457.295.

Sec. 48. NAC 459.180 is hereby amended to read as follows:

459.180 1. The provisions of NAC 459.180 to 459.314, inclusive, ***and sections 18 to 28, inclusive, of this regulation,*** provide for the licensing of radioactive materials. No person may receive, possess, use, transfer, own or acquire radioactive material except as authorized in a specific or general license issued pursuant to NAC 459.180 to 459.314, inclusive, ***and sections 18 to 28, inclusive, of this regulation,*** or as otherwise provided in those sections.

2. In addition to the requirements of NAC 459.180 to 459.314, inclusive, ***and sections 18 to 28, inclusive, of this regulation,*** all licensees are subject to the requirements of NAC 459.010 to 459.142, inclusive, ***and sections 2 to 17, inclusive, of this regulation,*** 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 459.3801 ~~[to 459.3966, inclusive.]~~ ***and 459.3805 and section 26 of this regulation.***

Sec. 49. 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 28, 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 ~~[megabequerels)]~~ ***megabecquerels)*** of tritium per timepiece.

(2) Five millicuries (185 ~~[megabequerels)]~~ ***megabecquerels)*** of tritium per hand.

(3) Fifteen millicuries (555 ~~[megabequerels)]~~ ***megabecquerels)*** of tritium per dial. If bezels are used, they are considered part of the dial.

(4) One hundred microcuries (3.7 ~~[megabequerels)]~~ ***megabecquerels)*** of promethium 147 per watch or 200 microcuries (7.4 ~~[megabequerels)]~~ ***megabecquerels)*** of promethium 147 per other timepiece.

(5) Twenty microcuries (740 ~~[kilobequerels)]~~ ***kilobecquerels)*** of promethium 147 per watch hand or 40 microcuries (1.48 ~~[megabequerels)]~~ ***megabecquerels)*** of promethium 147 per other timepiece hand.

(6) Sixty microcuries (2.22 ~~[megabequerels)]~~ ***megabecquerels)*** of promethium 147 per watch dial or 120 microcuries (4.44 ~~[megabequerels)]~~ ***megabecquerels)*** of promethium 147 per other timepiece dial. If bezels are used, they are considered part of the dial.

(7) Fifteen-hundredths microcurie (5.55 ~~[kilobequerels)]~~ ***kilobecquerels)*** of radium per timepiece.

(8) Three-hundredths microcurie (1.11 ~~[kilobequerels)]~~ ***kilobecquerels)*** of radium per hand.

(9) Nine-hundredths microcurie (3.33 ~~[kilobequerels)]~~ ***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 or 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) One microcurie (37 ~~[kilobequerels)]~~ ***kilobecquerels)*** of radium 226 per timepiece in timepieces acquired before February 28, 1980.

(b) Lock illuminators containing not more than 15 millicuries (555 ~~[megabequerels)]~~ ***megabecquerels)*** of tritium or not more than 2 millicuries (74 ~~[megabequerels)]~~ ***megabecquerels)*** of promethium 147 installed in automobile locks. The levels of radiation from each lock illuminator containing 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 more than 1 millicurie (37 ~~[megabequerels)]~~ ***megabecquerels)*** of tritium per balance or 0.5 millicurie (18.5 ~~[megabequerels)]~~ ***megabecquerels)*** of tritium per balance part.

(d) Automobile shift quadrants containing not more than 25 millicuries (925 ~~[megabequerels)]~~ ***megabecquerels)*** of tritium.

(e) Marine compasses containing not more than 750 millicuries (27.75 ~~[gigabequerels)]~~ ***gigabecquerels)*** of tritium gas and other marine navigational instruments containing not more than 250 millicuries (9.25 ~~[gigabequerels)]~~ ***gigabecquerels)*** of tritium gas.

(f) Thermostat dials and pointers containing not more than 25 millicuries (925 ~~[megabequerels)]~~ ***megabecquerels)*** of tritium per thermostat.

(g) 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 ~~[gigabequerels)]~~ ***gigabecquerels)*** of tritium per microwave receiver protector tube or 10 millicuries (370 ~~[megabequerels)]~~ ***megabecquerels)*** of tritium per any other electron tube;

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

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

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

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

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

(7) One microcurie (37 ~~[kilobequerels)]~~ ***kilobecquerels)*** of 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) Ionizing radiation measuring instruments containing, for purposes of internal calibration or standardization, a source of radioactive material not exceeding the applicable quantity in NAC 459.188.

2. For the purposes of NAC 459.180 to 459.314, inclusive, ***and sections 18 to 28, inclusive, of this regulation,*** 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) 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.

Sec. 50. 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 or promethium 147, any person is exempt from the provisions of NAC 459.010 to 459.950, inclusive, ***and sections 2 to 28, inclusive, of this regulation,*** to the extent that he receives, possesses, uses, transfers, owns or acquires tritium, krypton 85 or 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 or 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 28, inclusive, of this regulation,*** to the extent that he receives, possesses, uses, transfers or owns articles containing less than 0.1 microcurie (3.7 ~~[kilobequerels)]~~ ***kilobecquerels)*** of radium 226 which were acquired before February 28, 1980.

3. Except for persons who manufacture, process or produce 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 28, 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 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 transfer of the detectors to persons who are exempt from regulatory requirements. The following also applies 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

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 459.314, inclusive, ***and sections 18 to 28, inclusive, of this regulation,*** 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 ~~[kilobequerels)]~~ ***kilobecquerels)*** of carbon 14 urea.

➥ Nothing in this subsection relieves 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, ***and sections 2 to 28, inclusive, of this regulation,*** 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. 51. NAC 459.194 is hereby amended to read as follows:

459.194 Licenses for radioactive materials are of two types:

1. General licenses which ***grant authority to persons for certain activities involving radioactive materials and*** are effective without the filing of applications with the Division or the issuance of licensing documents to the particular persons, although the filing of a certificate with the Division may be required by the particular general license. ~~[The]~~ ***Except as otherwise provided in the specific provisions of a general license, including, without limitation, a provision concerning NAC 459.357, a*** general license is subject to all other applicable portions of these regulations and any limitations of the general license.

2. Specific licenses which ~~[require the submission of an application to]~~ ***are issued by*** the Division ~~[and the issuance of a licensing document by the Division. The]~~ ***to a named person who files an application for a license pursuant to the provisions of NAC 459.180 to 459.314, inclusive, and sections 18 to 28, inclusive, of this regulation. A specific*** license is subject to all applicable portions of these regulations as well as any limitations specified in the licensing document.

Sec. 52. NAC 459.1955 is hereby amended to read as follows:

459.1955 1. A plan for financing decommissioning, as described in subsection ~~[8,]~~ ***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 ~~[7]~~ ***9*** shall submit:

(a) A plan for financing decommissioning as described in subsection ~~[8;]~~ ***10;*** or

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

(1) Has been provided in the amount required by subsection ~~[7]~~ ***9*** using one of the methods set forth in subsection ~~[9;]~~ ***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.

~~[3.]~~ ***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 ~~[2,]~~ ***3,*** the applicant shall submit to the Division as part of the certification a signed original of the financial instrument used to comply with subsection ~~[9]~~ ***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 shall submit to the Division as part of the certification a signed original of the financial instrument used by the applicant to comply with subsection ~~[9.]~~ ***11.***

~~[4.]~~ ***5.*** An applicant for a specific license of the type described in subsection 1 or ~~[2,]~~ ***3*** shall submit a plan for financing decommissioning or a certification of financial assurance for decommissioning with his application.

~~[5.]~~ ***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 ~~[, on or before September 30, 1998,]~~ a plan for financing decommissioning or a certification of financial assurance for decommissioning in an amount not less than ~~[$750,000.]~~ ***$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 ~~[2,]~~ ***3*** shall submit ~~[, on or before September 30, 1998,]~~ a plan for financing decommissioning or a certification of financial assurance for decommissioning.

~~[6.]~~ ***7.*** A licensee who has submitted an application for renewal of his license before January 26, 1999, in accordance with NAC 459.202, shall ~~[provide]~~ ***:***

(a) Provide financial assurance for decommissioning in accordance with subsections 1 and ~~[2 before September 30, 1998.~~

~~7.]~~ ***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 ~~[$750,000]~~ ***$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 ~~[$150,000]~~ ***$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 ~~[$75,000]~~ ***$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.

~~[8.]~~ ***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 ~~[9.]~~ ***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 ~~[9.~~

~~9.]~~ ***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 ~~[12.]~~ ***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 ~~[12.]~~ ***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 ~~[7]~~ ***9*** and an indication that money for decommissioning will be obtained when necessary.

~~[10.]~~ ***12.*** A person licensed pursuant to NAC 459.180 to 459.314, inclusive, ***and sections 18 to 28, inclusive, of this regulation*** 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.

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

~~[11.]~~ ***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) and (c) of subsection ~~[10]~~ ***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.

~~[12.]~~ ***14.*** To pass the financial test referred to in subsection ~~[9:]~~ ***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 ~~[7;]~~ ***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 ~~[7;]~~ ***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 ~~[7,]~~ ***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.

~~[13.]~~ ***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 ~~[12]~~ ***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.

~~[14.]~~ ***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 Services 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.

~~[15.]~~ ***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 ~~[12 and 14.]~~ ***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 must 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.

~~[16.]~~ ***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 Services, Inc., the licensee must 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 Services, Inc., the licensee or parent company, as applicable, no longer meets the financial test as set forth in subsection ~~[12.~~

~~17.]~~ ***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 must establish a trust in the amount of the current cost estimates for decommissioning.

~~[18.]~~ ***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. 53. 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 18 to 28, 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 18 to 28, 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 18 to 28, 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]~~ ***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 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 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 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 material 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 18 to 28, 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.

Sec. 54. NAC 459.200 is hereby amended to read as follows:

459.200 1. Except as otherwise provided in subsections 2 and 3, 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. 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. 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. 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. Except as otherwise provided in subsection 7, 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. Coincident with the notification required by subsection 5, 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. The Division may grant a request to extend the period during which notification is required pursuant to subsection 5 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. The schedule for decommissioning may not commence until the Division has made a determination on the request.

8. 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. 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.

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

11. Except as otherwise provided in subsection 12, 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. 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. 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 ~~[(megabequerels)]~~ ***(megabecquerels)*** per 100 square centimeters, removable and fixed, for surfaces;

(II) Microcuries ~~[(megabequerels)]~~ ***(megabecquerels)*** per milliliter for water; and

(III) Picocuries ~~[(bequerels)]~~ ***(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. 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 ~~[10]~~ ***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. 55. NAC 459.202 is hereby amended to read as follows:

459.202 Applications for renewal of specific licenses must be filed in accordance with NAC ***459.200 and*** 459.236 and, except as otherwise provided in NAC 459.203, must be accompanied by the appropriate fee as set forth in NAC 459.310. The application for renewal must be received by the Division not later than the date on which the license expires. If the application is not received by that date, the licensee must:

1. 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

2. Submit to the Division within 5 days after the license expires an application for renewal of the license accompanied by a fee that is equal to twice the amount of the appropriate fee set forth in NAC 459.310.

Sec. 56. 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 **.** ~~[which authorizes distribution of devices to persons generally licensed by the Nuclear Regulatory Commission or an agreement state.~~

~~3. The general license in subsection 1 does not authorize the manufacture of devices containing radioactive material.]~~

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 of NAC 459.218 and section 18 of this regulation.

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, 459.312 and 459.314 ~~[.]~~ ***and sections 18 to 28, inclusive, of this regulation.***

Sec. 57. 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 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. Records of tests of the on-and-off mechanism and indicator required by subsection 2 must be maintained for 1 year 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 for a period of 2 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)*** or more of removable radioactive material ~~[, shall]~~ ***:***

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

(b) Shall immediately suspend operation of the device ~~[and,]~~ ***;***

(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) 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) 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 devise 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. Except as otherwise provided in subsection 8, may transfer or dispose of the device containing radioactive material only 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, the person shall furnish to the Division a report containing identification of the device by ***the*** manufacturer's ***or initial transferor's*** name ~~[and]~~ ***, the*** model number and ***serial number of the device transferred,*** the name ***,*** ~~[and]~~ address ***and license number*** of the person receiving the device ~~[, but no report is required if the device is transferred to the specific licensee in order to obtain a replacement 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 approval of the transfer from the Division.***

8. 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 28, 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 ~~[and]~~ ***, 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. 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. 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. 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. Except for a person who holds a general license issued by the Division, 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, shall:

(a) Register any device which contains:

(1) Ten millicuries (370 megabecquerels) or more of cesium-137;

(2) One-tenth millicuries (3.7 megabecquerels) or more of strontium-90;

(3) One millicurie (37 megabecquerels) of cobalt-60;

(4) One millicurie (37 megabecquerels) of americium-241; or

(5) One millicurie (37 megabecquerels) 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. 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 11;

(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 11 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 11 that the responsible person is aware of the requirements of the general license.

13. 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. 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. 58. 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 pursuant to the provisions of section 20 or 21 of this regulation or 10 C.F.R. § 32.210 or registered with an agreement state pursuant to an equivalent regulation of the agreement state; or

(b) Contain the information identified in section 20 or 21 of this regulation, 10 C.F.R. § 32.210 or an equivalent regulation of an agreement state.

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.

Sec. 59. 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 459.240 to ~~[459.258,]~~ ***459.2565,*** inclusive, 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. 60. NAC 459.280 is hereby amended to read as follows:

459.280 An application for a specific license authorizing the incorporation of a naturally occurring or accelerator-produced radioactive material, other than source or by-product material, into gas and aerosol detectors to be distributed to persons exempt under NAC 459.192 will be approved if:

1. The application satisfies requirements equivalent to those contained in 10 C.F.R. § 32.26 of the regulations of the Nuclear Regulatory Commission; and

2. The amount of radium 226 to be incorporated in each device does not exceed 0.1 microcurie (3.7 ~~[kilobequerels).]~~ ***kilobecquerels).***

Sec. 61. 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 ~~[no]~~ ***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 **.** ~~[; and]~~

(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 of 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 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. 62. 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 ~~[radiopharmaceuticals]~~ ***radioactive drugs*** containing radioactive material for use by persons licensed for medical use pursuant to NAC 459.240 ~~[, 459.242 or 459.258,]~~ ***or 459.242,*** or 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 by:

(I) The United States Food and Drug Administration; or

(II) An agency of this State;

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

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

(c) The applicant submits information on the radionuclide, chemical and physical form, maximum activity per vial, syringe, generator or other container of the ~~[radiopharmaceutical]~~ ***radioactive drug*** and shielding provided by the packaging of the radioactive material to demonstrate that it is appropriate for safe handling and storage of ~~[radiopharmaceuticals]~~ ***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 ~~[radiopharmaceutical,]~~ ***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 ~~[pharmaceuticals]~~ ***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 ~~[radiopharmaceutical]~~ ***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 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 ~~[radiopharmaceuticals]~~ ***a radioactive drug*** for medical use if the ~~[radiopharmaceutical]~~ ***radioactive drug*** is prepared by ~~[:~~

~~(1) An]~~ ***an*** authorized nuclear pharmacist ***.*** ~~[; or~~

~~(2) A person under the supervision of an authorized nuclear pharmacist pursuant to NAC 459.3817.]~~

(b) May allow a pharmacist to work as an authorized nuclear pharmacist if the pharmacist ~~[:~~

~~(1) Is]~~ ***is*** an authorized nuclear ~~[pharmacist; or~~

~~(2) Has received the training set forth in paragraph (b) of subsection 1 of NAC 459.3961 within the 7 years immediately preceding the date he begins work as an authorized nuclear pharmacist and the licensee has received an amendment to his license identifying the pharmacist as an authorized nuclear]~~ pharmacist.

(c) May designate a pharmacist as an authorized nuclear pharmacist if the pharmacist is identified ***, as of the effective date of this regulation,*** 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.

(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; and

(2) 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 ~~[radiopharmaceuticals]~~ ***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 ~~[radiopharmaceuticals;]~~ ***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 ~~[radiopharmaceuticals]~~ ***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 of this section relieves 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. 63. NAC 459.302 is hereby amended to read as follows:

459.302 An application for a specific license to manufacture and distribute generators or reagent kits containing radioactive material for preparation of radiopharmaceuticals by persons licensed for human use pursuant to NAC 459.240 ~~[, 459.242, or 459.258]~~ ***or 459.242*** or by persons authorized under a license issued by the Nuclear Regulatory Commission or any other agreement state will be approved if:

1. The applicant satisfies the general requirements specified in NAC 459.238;

2. The applicant submits evidence that:

(a) The generator or reagent kit is to be manufactured, labeled, and packaged in accordance with the Federal Food, Drug and Cosmetic Act or the Public Health Act, such as a new drug application approved by the Food and Drug Administration, a biologic product license issued by the ~~[administration,]~~ ***Administration,*** or a Notice of Claimed Investigational Exemption for a New Drug that has been accepted by the ~~[administration;]~~ ***Administration;*** or

(b) The manufacture and distribution of the generator or reagent kit are not subject to the Federal Food, Drug and Cosmetic Act and Public Health Service Act;

3. The applicant submits information on the radionuclide, chemical, and physical form, packaging including maximum activity per package and shielding provided by the packaging of the radioactive material contained in the generator or reagent kit;

4. The label affixed to the generator or reagent kit contains information on the radionuclide, quantity, and date of assay; and

5. The label affixed to the generator or reagent kit, or the leaflet or brochure which accompanies the generator or reagent kit, contains:

(a) Adequate information from a radiation safety standpoint on the procedures to be followed and the equipment and shielding to be used in eluting the generator or processing radioactive material with the reagent kit; and

(b) A statement that this generator or reagent kit is approved for use by persons licensed by the Division pursuant to NAC 459.240 ~~[, 459.242, or 459.258,]~~ ***or 459.242,*** or under equivalent licenses of the Nuclear Regulatory Commission or an agreement state. The labels, leaflets, or brochures required by this paragraph are in addition to the labeling required by the ~~[administration]~~ ***Administration*** and they may be separate from or, with the approval of the administration, may be combined with the labeling required by the ~~[administration.]~~ ***Administration.***

Sec. 64. NAC 459.304 is hereby amended to read as follows:

459.304 Although the Division does not regulate the manufacture and distribution of reagent kits that do not contain radioactive material, it does regulate the use of such reagent kits for the preparation of ~~[radiopharmaceuticals]~~ ***radioactive drugs*** containing radioactive material as part of its licensing and regulation of the users of radioactive material. Any resident manufacturer of reagent kits not containing radioactive material who desires to have his reagent

kits approved by the Division for use by persons licensed for medical use pursuant to NAC 459.240 ~~[, 459.242, or 459.258]~~ ***or 459.242*** may submit the pertinent information specified in NAC 459.302.

Sec. 65. 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 ~~[NAC 459.240, 459.242, or 459.258]~~ ***10 C.F.R. Part 35 or equivalent regulations of an agreement state, for use as a calibration or reference source or for the uses listed in 10 C.F.R. §§ 35.400, 35.500 and 35.600 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; these instructions are to 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, date of assay, and a statement that the source or device is ~~[licensed]~~ ***approved*** by the Division for distribution to persons licensed ~~[pursuant to NAC 459.240, 459.242, or 459.258, or under]~~ ***to use radioactive material identified in 10 C.F.R. §§ 35.57, 35.400, 35.500 and 35.600 or to persons who hold*** equivalent licenses of the Nuclear Regulatory Commission or an agreement state ***.*** ~~[provided that labeling for the sources which do not require long-term storage, for example, gold-198 seeds, may be on a leaflet or brochure which accompanies the source.]~~

Sec. 66. NAC 459.307 is hereby amended to read as follows:

459.307 1. Any licensee who possesses sealed sources shall have each sealed source containing radioactive material ~~[, other than hydrogen 3, with a half-life greater than 30 days in any form other than gas]~~ tested for leakage at intervals not to exceed 6 months, unless a longer interval is authorized by the Division ~~[.]~~ ***, the Nuclear Regulatory Commission or an agreement state in the Sealed Source and Device Registry maintained by the Nuclear Regulatory Commission.*** In the absence of a certificate from a transferor indicating that a test has been made within 6 months ~~[prior to]~~ ***before*** the transfer, the sealed sources should not be used until tested, but no leak tests are required when:

(a) ***The source contains only radioactive material with a half-life of less than 30 days;***

(b) The source contains only radioactive material as a gas;

(c) The source contains 100 microcuries (3.7 ~~[megabequerels)]~~ ***megabecquerels)*** or less of beta or gamma emitting material or 10 microcuries (370 ~~[kilobequerels)]~~ ***kilobecquerels)*** or less of alpha emitting material; ~~[or~~

~~(b)]~~ ***(d)*** The sealed source is stored and is not being used. The sources must be tested for leakage ~~[prior to]~~ ***before*** any use or transfer unless they have been leak tested within 6 months ~~[prior to]~~ ***before*** the date of use or transfer ~~[.]~~ ***; or***

(e) The source is seeds of iridium-192 encased in nylon ribbon.

2. The leak test must be capable of detecting the presence of 0.005 microcurie (185 ~~[bequerels)]~~ ***becqerels)*** of radioactive material on the test sample. The test sample must be taken from the sealed source or from the surfaces of the device in which the sealed source is permanently mounted or stored on which contamination might be expected to accumulate. Records of leak test results must be ~~[kept in units of microcuries and]~~ maintained for 5 years for inspection by the Division ~~[.]~~ ***and, for persons licensed pursuant to the provisions of this chapter for the medical use of radioactive material, must include, without limitation:***

(a) The model number and serial number, if one has been assigned, of each sealed source tested;

(b) The identity of each source by radionuclide and its estimated activity;

(c) The results of the test of each sealed source;

(d) The date of the test of each sealed source; and

(e) The name of the person who performed each test.

3. If the leak test reveals the presence of 0.005 microcurie (185 ~~[bequerels)]~~ ***becquerels)*** or more of removable contamination, or 0.001 microcurie (37 ~~[bequerels)]~~ ***becquerels)*** of radon 222 in a 24-hour period if the sealed source is a brachytherapy source manufactured to contain

radium, the licensee shall immediately inform the Radiological Health Section of the Division by telephone, withdraw the sealed source, or the device in which it is permanently mounted, from use and cause it to be placed in locked storage. A ***written*** report must be filed with the Division within 5 days of the test ~~[describing]~~ ***and must include, without limitation:***

(a) A description of the equipment involved ~~[, the]~~ ***;***

(b) The model number and serial number, if assigned, of the leaking source;

(c) The radionuclide of the leaking source and its estimated activity;

(d) The test results ~~[and the location of the source.]~~ ***;***

(e) The date of the test; and

(f) A description of the action taken.

Sec. 67. 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
(b) In unsealed form	2,000
2. Source materials for other than milling operations	$2,000
3. By-product material ***, artificially produced radioactive material*** and radium:	
(a) Manufacturing or distribution, or both	$2,000

(b) Nuclear pharmacy 6,000

(c) Industrial radiography 5,000

(d) Category 1 irradiator 1,500

(e) Academic, broad scope 8,000

(f) Academic, other research and development 1,200

(g) Service or laboratory 1,600

(h) Fixed gauge 1,000

(i) Gas chromatograph 450

(j) In vitro 95

(k) Portable gauge or X-ray fluorescence analyzer 1,200

(l) All other uses of source material, special nuclear material, by-product material and radium except those set forth in subsections 4 to ~~[7,]~~ ***8,*** inclusive 1,000

4. Well logging $3,000

5. Medical use or veterinary use of radioactive material:

(a) Medical use or veterinary use only $4,000

(b) With teletheraphy 4,000

(c) With high dose remote afterloader 4,000

(d) With brachytheraphy ..... ~~[3,000]~~ ***4,000***

(e) Teletheraphy only 4,000

(f) High dose remote afterloader only 4,000

(g) Brachytheraphy only ..... ~~[3,000]~~ ***4,000***

(h) General license for in vitro use 115

6. Civil defense $250

7. Registration of devices generally licensed pursuant to paragraph (a) of subsection 12 of NAC 459.218..... $250

8. Any use of source material, special nuclear material, by-product material or radium by a person who holds a license issued by the Nuclear Regulatory Commission or any agreement state ..... See appropriate fee category above

Sec. 68. NAC 459.316 is hereby amended to read as follows:

459.316 As used in NAC 459.316 to 459.3184, inclusive, unless the context otherwise requires, the words and terms defined in NAC ~~[459.3162 to 459.3168, inclusive,]~~ ***459.3164, 459.3166 and 459.3168*** have the meanings ascribed to them in those sections.

Sec. 69. NAC 459.318 is hereby amended to read as follows:

459.318 1. The property of a decommissioned facility that is not eligible for release for unrestricted use is eligible for release for restricted use if the licensee:

(a) Demonstrates that further reductions in residual radioactivity necessary to comply with NAC 459.3178:

(1) Would result in net increase in harm to the public or environment; or

(2) Were not being made because the levels of residual radioactivity associated with restricted conditions are as low as is reasonably achievable.

(b) Establishes that the licensee has provided for institutional controls that:

(1) Are legally enforceable;

(2) Provide reasonable assurance that the average member of the critical group will receive a total effective dose equivalent from residual radioactivity at the site distinguishable from background radiation that does not exceed 25 millirem (0.25 millisievert) per year; and

(3) Will not impose an undue burden on the community to be affected by the decommissioning or any person or institution therein.

(c) Provides, by a method set forth in subsection 4, sufficient financial assurance to enable a third party, including a governmental custodian of the site, to assume and carry out responsibilities for any necessary control and maintenance of the site.

(d) Submits to the Division a decommissioning plan that:

(1) Declares the intent of the licensee to decommission in accordance with NAC 459.1955;

(2) Specifies that the licensee intends to decommission by restricting the use of the site; and

(3) Documents how the advice of persons and institutions in the community that may be affected by the decommissioning has been sought, analyzed and, if appropriate, incorporated into the decommissioning plan.

(e) Provides reasonable assurance that the residual radioactivity at the site distinguished from background radiation has been reduced to levels such that, even in the absence of the institutional controls required by paragraph (b), the average member of the critical group will receive a total effective dose equivalent, from residual radioactivity at the site distinguishable from background radiation, that:

(1) Is as low as is reasonably achievable; and

(2) Except as otherwise provided in subsection 2, does not exceed 100 millirem (1 millisievert) per year.

2. A licensee may satisfy the requirements of subparagraph (2) of paragraph (e) of subsection 1 if the licensee:

(a) Provides reasonable assurance that the average member of the critical group will receive a total effective dose equivalent, from residual radioactivity at the site distinguishable from background radiation, that does not exceed 500 millirem (5 millisieverts) per year;

(b) Demonstrates that reducing residual radioactivity to the level necessary to comply with the 100 millirem (1 millisievert) requirement of subparagraph (2) of paragraph (e) of subsection 1 is not technically feasible, would be prohibitively expensive, or would likely result in net harm to the public or environment;

(c) Makes provisions for durable institutional controls; and

(d) Provides, by a mechanism set forth in subsection 4, sufficient financial assurance to enable a third party, including a governmental custodian of the site:

(1) To carry out periodic rechecks of the site not less frequently than every 5 years to ensure that the institutional controls remain in place as necessary to meet the criteria of paragraph (b) of subsection 1; and

(2) To assume and carry out responsibility for any necessary control and maintenance of those controls.

3. Before a licensee may submit to the Division a decommissioning plan pursuant to subsection 1, the licensee must seek advice from natural persons and institutions in the community who may be affected by the decommissioning concerning whether the licensee's

proposed plan of decommissioning satisfies each of the requirements of paragraphs (b) and (c) of subsection 1.

4. A licensee, to satisfy the requirements of this section relating to the provision of financial assurance, may use any of the following methods:

(a) The deposit of an amount of money in cash or liquid assets into an account that is segregated from the assets of the licensee and outside the administrative control of the licensee as described in paragraph (a) of subsection ~~[9]~~ ***11*** of NAC 459.1955;

(b) Provision of a surety, including insurance, or other guarantee, as described in paragraph (b) of subsection ~~[9]~~ ***11*** of NAC 459.1955;

(c) If the licensee is a federal, state or local governmental entity, a statement of intent as described in paragraph (d) of subsection ~~[9]~~ ***11*** of NAC 459.1955; or

(d) If a federal, state or local governmental entity is assuming custody and ownership of the site, any arrangement or mechanism for financial assurance that the governmental entity determines is adequate.

Sec. 70. NAC 459.320 is hereby amended to read as follows:

459.320 1. The provisions of NAC 459.320 to 459.374, inclusive, establish standards for protection against radiation hazards. It is the purpose of those sections to control the receipt, possession, use, disposal and transfer of licensed or registered sources of radiation by any licensee or registrant in such a manner that the total dose to a natural person, including exposures to licensed or unlicensed or registered or unregistered sources of radiation, whether in the possession of the licensee, registrant or any other person, but not including exposure to radiation from natural background sources, medical diagnosis and therapy, natural persons who have been administered ~~[radiopharmaceuticals]~~ ***radioactive drugs*** or have received permanent implants

containing radioactive material and have been released from the control of a licensee pursuant to ~~[~~NAC 459.256,~~]~~ ***10 C.F.R. § 35.75,*** or voluntary participation in medical research does not exceed the standards of radiation protection set forth in NAC 459.320 to 459.374, inclusive. Those sections will not be construed as limiting actions that may be necessary to protect the health and safety of the public.

2. Except as otherwise specifically provided, NAC 459.320 to 459.374, inclusive, apply to all licensees or registrants. Those sections do not limit the intentional exposure of natural persons to radiation for the purpose of medical use or the intentional exposure of natural persons to radiation who are voluntarily participating in programs for medical research.

3. In addition to complying with the requirements set forth in NAC 459.320 to 459.374, inclusive, a licensee or registrant shall make every reasonable effort to maintain exposures and releases of radioactive materials in effluents to unrestricted areas, as low as is reasonably achievable.

Sec. 71. NAC 459.3205 is hereby amended to read as follows:

459.3205 The State Board of Health hereby adopts by reference appendices A, B and C to 10 C.F.R. §§ 20.1001 to 20.2402, inclusive, as those provisions existed on ~~[~~January 1, 1998.~~]~~ ***October 13, 1999.*** A copy of the volume containing these appendices may be purchased from the Superintendent of Documents, United States Government Printing Office, P.O. Box 371954, Pittsburgh, Pennsylvania 15250-7854, for the price of $39 ~~[~~.~~]~~ ***, or are available, free of charge, at the Internet address http://www.gpoaccess.gov/cfr/index.html.***

Sec. 72. NAC 459.3235 is hereby amended to read as follows:

459.3235 1. Except as otherwise provided in subsection 2, the quality factors for converting an absorbed dose to a dose equivalent are as follows:

Quality Factors and Absorbed Dose Equivalencies

Type of Radiation	Quality Factor	Absorbed Dose Equal to a Unit Dose Equivalent
X-, gamma, or beta radiation and high-speed electrons	1	1
Alpha particles, multiple-charged particles, fission fragments and heavy particles of unknown charge	20	0.05
Neutrons of unknown energy	10	0.1
High-energy protons	10	0.1

2. If it is more convenient to measure the neutron fluence rate than to determine the neutron dose equivalent rate in rems per hour, as provided in subsection 1, 1 rem of neutron radiation of unknown energies may, for the purposes of NAC 459.010 to 459.950, inclusive, ***and sections 2 to 28, inclusive, of this regulation,*** be assumed to result from a total fluence of 25,000,000

neutrons per square centimeter incident upon the body. If sufficient information exists to estimate the approximate energy distribution of the neutrons, the licensee or registrant may use the fluence rate per unit dose equivalent or the appropriate quality factor value from the following table to convert a measured tissue dose in rads to dose equivalent in rem:

Mean Quality Factors and Fluence per Unit Dose Equivalent for Monoenergetic Neutrons

	Neutron Energy (MeV)	Quality Factor	Fluence per Unit Dose Equivalent (neutrons ~~[m^{-2}]~~ ***cm^{2}*** rem^{-1})
(thermal)	2.5E-8	2	980E+6
	1E-7	2	980E+6
	1E-6	2	810E+6
	1E-5	2	810E+6
	1E-4	2	840E+6
	1E-3	2	980E+6
	1E-2	2.5	1010E+6
	1E-1	7.5	170E+6
	5E-1	11	39E+6

Neutron Energy	Quality Factor	Fluence per Unit Dose Equivalent
1	11	27E+6
2.5	9	29E+6
5	8	23E+6
7	7	24E+6
10	6.5	24E+6
14	7.5	17E+6
20	8	16E+6
40	7	14E+6
60	5.5	16E+6
1E+2	4	20E+6
2E+2	3.5	19E+6
3E+2	3.5	16E+6
4E+2	3.5	14E+6

3. For the purposes of subsection 2, the quality factor must be measured at the point where the dose equivalent is maximum in a 30-centimeter diameter cylinder tissue-equivalent phantom.

Sec. 73. 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 ~~[or to]~~ ***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. The ***assigned*** deep-dose equivalent ~~[and shallow-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. 74. NAC 459.335 is hereby amended to read as follows:

459.335 1. Except as otherwise provided in this section and subsection 2 of NAC 459.321, each licensee and registrant shall conduct operations to ensure that:

(a) The total effective dose equivalent to any member of the public from its licensed or registered operation does not exceed 0.1 rem (1 millisievert) per year, not including the dose contribution from background radiation, any medical administration the member of the public has received, exposure to natural persons who have been administered radioactive material and have been released from the control of a licensee pursuant to ~~[~~NAC 459.256,~~]~~ ***10 C.F.R. § 35.75,*** voluntary participation in medical research, and the disposal by the licensee of radioactive material into sanitary sewerage in accordance with NAC 459.3605; and

(b) The dose in any unrestricted area from external sources, not including the dose contributions from natural persons who have been administered radioactive material and have been released from the control of a licensee pursuant to ~~[~~NAC 459.256,~~]~~ ***10 C.F.R. § 35.75,*** does not exceed 0.002 rem (0.02 millisievert) ~~[~~per~~]~~ ***in any 1*** hour.

2. ***Notwithstanding the provisions of paragraph (a) of subsection 1, a licensee may allow a visitor to a person who cannot be released pursuant to 10 C.F.R. § 35.75 to receive a radiation dose greater than 0.1 rem (1 millisievert) if:***

(a) The radiation dose does not exceed 0.5 rem (5 millisieverts); and

(b) Before the visit, the licensee has determined that the visit is appropriate.

3. A licensee, a registrant or an applicant for a license or registration may apply to the Division for authorization to ~~[increase the limit set forth in paragraph (a) of subsection 1 to]~~ ***operate up to an annual dose limit for a member of the public of*** 0.5 rem (5 millisieverts) per year. The application must include:

(a) A ~~[statement]~~ ***demonstration*** of the need for and the expected duration of operations in excess of the limit specified in paragraph (a) of subsection 1;

(b) A description of the ~~[proposed]~~ program of the licensee or registrant to assess and control the dose within the annual limit of 0.5 rem ~~[;]~~ ***(5 millisieverts);*** and

(c) The procedures to be followed to maintain the dose as low as is reasonably achievable.

~~[3.]~~ ***4.*** The Division may impose additional restrictions on radiation levels in unrestricted areas and on the total quantity of radionuclides that ***a licensee*** may ~~[be released]~~ ***release*** in effluents in order to restrict the collective dose.

5. In addition to the requirements of this section, a licensee who is subject to the provisions of 40 C.F.R. Part 190 shall comply with the standards set forth therein.

Sec. 75. NAC 459.347 is hereby amended to read as follows:

459.347 1. A licensee shall use, to the extent practicable, process or other engineering controls ***, including, without limitation, containment, decontamination and ventilation,*** to control the concentrations of radioactive material in the air.

2. If it is not practicable to apply process or other engineering controls to control the concentrations of radioactive material in the air to levels below those that define an area of airborne radioactivity, the licensee shall, consistent with maintaining the total effective dose

equivalent as low as is reasonably achievable, increase monitoring and limit intakes by ~~[:]~~ ***one or more of the following:***

(a) Controlling access to the area;

(b) Limiting exposure times;

(c) Using respiratory protective devices; or

(d) Using any other means available to control concentrations of radioactive material in the air.

3. If the licensee performs an analysis of exposures to radiation to determine what exposure level is as low as is reasonably achievable and to determine whether respiratory protective devices should be used, the licensee may consider safety factors other than radiological safety factors, including, without limitation, consideration of the effect of respiratory protective devices on the industrial health and safety of workers.

Sec. 76. NAC 459.349 is hereby amended to read as follows:

459.349 1. If a licensee uses respiratory protective devices to limit intakes as required pursuant to NAC 459.347, ~~[~~~~he~~~~]~~ ***the licensee*** shall comply with the following requirements:

(a) Except as otherwise provided in paragraph (b), the licensee shall use only a respiratory protective device that is tested and certified, or has had certification extended, by the National Institute for Occupational Safety and Health **.** ~~[~~~~and the Mine Safety and Health Administration.~~~~]~~

(b) If the licensee wishes to use equipment that has not been tested or certified by the National Institute for Occupational Safety and Health **,** ~~[~~~~and the Mine Safety and Health Administration, has not had certification extended by the National Institute for Occupational Safety and Health and the Mine Safety and Health Administration,~~~~]~~ or for which there is no schedule for testing or certification, the licensee shall submit an application for ~~[~~~~authorization to~~~~]~~

authorized use ***of*** that equipment. The application must include evidence that the material and performance characteristics of the equipment are capable of providing the proposed degree of protection under anticipated conditions of use. The evidence must be acquired from ~~[testing]~~ ***tests performed on*** the equipment ***by the licensee*** or based on information obtained from other reliable tests that have been performed on the equipment.

(c) The licensee shall ~~[carry out]~~ ***implement and maintain*** a program for respiratory protection that includes, without limitation:

(1) A sampling of the air that is sufficient to identify any potential hazard, permit the proper selection of equipment and estimate ~~[exposures;]~~ ***doses;***

(2) Surveys and bioassays, as ~~[appropriate,]~~ ***necessary,*** to evaluate actual intakes;

(3) Testing respiratory protective devices for operability immediately before each use ~~[;]~~ ***, including, without limitation, user-performed seal checks for face-sealing respirators and functional checks for all other respirators;***

(4) Written procedures regarding ~~[the selection, fitting, issuance, maintenance and testing of respiratory protective devices, including, without limitation, procedures for:~~

~~(I) Testing for operability immediately before each use;]~~ ***:***

(I) Testing, including, without limitation, fit testing;

(II) The supervision and training of ~~[personnel;]~~ ***users of respiratory protective devices;***

(III) Recordkeeping; ~~[and]~~

(IV) Monitoring, including, without limitation, sampling air and bioassays;

(V) Selection of respiratory protective devices;

(VI) Breathing air quality;

(VII) Inventory and control of respiratory protective devices;

(VIII) Storage, issuance, maintenance, repair and quality assurance of respiratory protective devices; and

(IX) Limitations on periods of use of respiratory protective devices and relief from use of respiratory protective devices; and

(5) The determination by a physician that each user ***of a face-sealing respirator or nonface-sealing respirator*** is medically fit to use the ~~[respiratory protective device]~~ ***respirator*** before the initial fitting of ~~[each respiratory protective device]~~ ***a face-sealing respirator or before the first use of a nonface-sealing respirator*** and:

(I) At least once every 12 months after the initial fitting; or

(II) Periodically at a frequency that is determined by the physician.

(d) The licensee shall ~~[issue a written statement of policy regarding the use of respiratory protective devices that includes:~~

~~(1) The use of process or other engineering controls instead of respiratory protective devices;~~

~~(2) The routine, nonroutine and emergency use of respiratory protective devices; and~~

~~(3) The length of use of respiratory protective devices and relief from such use.]~~ ***perform fit testing for a respirator before the first field use of a respirator with a tight-fitting facepiece and not less than annually thereafter. The fit test must be performed with the facepiece of the respirator operating in the negative pressure mode and the fit factor:***

(1) For a negative pressure respirator must be greater than or equal to 10 times the air pressure flow; and

(2) For a positive pressure, continuous flow or pressure demand respirator the fit factor must exceed 500.

(e) The licensee shall advise each user of a respiratory protective device that the user may leave the area at any time ***for relief from the use of the respiratory protective device*** if:

(1) The device malfunctions;

(2) He suffers physical or psychological distress;

(3) There is a failure of communication or ~~[a failure to comply with procedural requirements;]~~ ***procedures;***

(4) There is a significant deterioration in the operating conditions; or

(5) There are any other conditions that might require relief from use of the device.

(f) The licensee shall ~~[use respiratory protective devices within the manufacturer's expressed limitations for type and mode of use and shall provide proper visual, communication and other special capabilities when needed.~~

~~2. When estimating the exposure of persons to airborne radioactive materials, the licensee may make allowance for respiratory protective devices used to limit intakes pursuant to NAC 459.347, if the following conditions, in addition to those specified in subsection 1, are satisfied:~~

~~(a) The licensee selects a respiratory protective device that provides a protection factor, as specified in Appendix A, which is greater than the multiple by which peak concentrations of airborne radioactive materials in the working area are expected to exceed the values specified in Column 3 of Table I of Appendix B. If the selection of a respiratory protective device with a protection factor greater than the multiple is inconsistent with the requirement specified in NAC 459.347 for keeping the total effective dose equivalent as low as is reasonably achievable, the licensee may select a respiratory protective device with a lower protection factor only if such a~~

~~selection would result in a total effective dose equivalent that is as low as is reasonably achievable. The concentration of radioactive material in the air that is inhaled when the respiratory protective device is worn may be initially estimated by dividing the average concentration in the air, during each period of uninterrupted use, by the protection factor. If the exposure is later found to be greater than initially estimated, the corrected value must be used. If the exposure is later found to be less than initially estimated, the corrected value may be used.~~

~~(b)]~~ ***:***

(1) Consider limitations appropriate to the type of respiratory protective device and the intended mode of use of the respiratory protective device;

(2) When selecting a respiratory protective device, provide for vision correction, adequate communication, low-temperature work environments and the concurrent use of other safety and radiological protection equipment; and

(3) Use equipment in a manner that does not interfere with the proper operation of the respiratory protective device.

(g) The licensee shall provide standby rescue personnel when a person is using a one-piece atmosphere-supplying suit or any combination of a supplied-air respirator and personnel protective equipment from which the person would have difficulty extricating himself. The standby rescue personnel must:

(1) Be equipped with respiratory protective devices or other equipment appropriate to the potential hazards.

(2) Visually observe the person who is using a one-piece atmosphere-supplying suit or any combination of a supplied-air respirator and personnel protective equipment or maintain

continuous communication with such person through visual, voice, signal line, telephone, radio or other suitable means of communication.

(3) Be immediately available to assist the person who is using a one-piece atmosphere-supplying suit or any combination of a supplied-air respirator and personnel protective equipment in case of a failure of air supply or for any other reason that requires relief from distress.

(4) Be sufficient in number and training to provide immediate assistance to the person who is using a one-piece atmosphere-supplying suit or any combination of a supplied-air respirator and personnel protective equipment and to provide effective emergency rescue if needed.

(h) The licensee shall ensure that atmosphere-supplying respirators are supplied with desirable air of grade D quality or better as defined in Publication G-7.1, "Commodity Specification for Air" (1997), and the provisions of 29 C.F.R. §§ 1910.134(i)(1)(ii)(A) to 1910.134(i)(1)(ii)(E), inclusive. A hard copy of Publication G-7.1, "Commodity Specification for Air" (1997), published by the Compressed Gas Association, may be obtained at a cost of $32 for a member of the Compressed Gas Association or $58 for a nonmember at the Internet address http://www.cganet.com/Publication.asp. An electronic copy of the publication may be obtained free of charge for a member of the Compressed Gas Association or at a cost of $44 for a nonmember at the Internet address http://www.cganet.com/Publication.asp.

(i) The licensee shall ensure that no objects, materials or substances, including, without limitation, facial hair, or any conditions which could interfere with the face-to-facepiece seal or valve function and which are under the control of the user of the respirator are present

between the skin of the face of the user of the respirator and the sealing surface of a tight-fitting facepiece.

(j) In measuring the dose to persons from the intake of airborne radioactive material, the licensee must assume initially that the concentration of radioactive material in the air that is inhaled when a respirator is worn is the ambient concentration of radioactive material in the air without a respirator divided by the assigned protection factor of the respirator. If the licensee later finds that the actual dose is greater than the estimated dose, the actual dose must be used. If the actual dose is later found to be less than the estimated dose, the actual dose may be used.

2. A licensee shall obtain authorization from the Division before ~~[assigning]~~ ***using assigned*** respiratory protection factors in excess of those specified in Appendix A. The Division may authorize a licensee to use higher ***assigned*** protection factors upon receipt of an application that:

~~[(1)]~~ ***(a)*** Describes the situation for which a need exists for higher protection factors; and

~~[(2)]~~ ***(b)*** Demonstrates that the respiratory protective device provides these higher protection factors under the proposed conditions of use.

3. In ~~[an emergency, the licensee shall use as emergency equipment only respiratory protective devices that have been specifically certified, or had certification extended, for emergency use by the National Institute for Occupational Safety and Health and the Mine Safety and Health Administration.~~

~~4. The licensee shall notify the Division in writing at least 30 days before the date that a respiratory protective device is first used pursuant to subsection 1 or 2.]~~ ***addition to any restrictions imposed pursuant to the provisions of this section and NAC 459.347, the Division may impose restrictions on the use of respiratory protective devices by a licensee to:***

(a) Ensure that the respiratory protection program of the licensee is adequate to limit doses to persons from the intake of airborne radioactive material consistent with maintaining total effective dose equivalent as low as is reasonably achievable; and

(b) Limit the extent to which a licensee may use respiratory protection devices instead of processes or engineering controls to limit doses to persons from the intake of airborne radioactive material.

Sec. 77. NAC 459.3565 is hereby amended to read as follows:

459.3565 1. A licensee or registrant is not required to post signs pursuant to NAC 459.3555 in an area or room containing sources of radiation for periods of less than 8 hours if:

(a) The sources of radiation are constantly attended during these periods by a person who takes the precautions necessary to prevent the exposure of persons to sources of radiation in excess of the limits established in NAC 459.325, 459.331, 459.333 and 459.335; and

(b) The area or room is subject to the control of the licensee or registrant.

2. A room or other area in a hospital that is occupied by a patient is not required to be posted with signs pursuant to NAC 459.3555 if:

(a) The patient is being treated with sealed sources of radiation or has been treated with unsealed radioactive material in quantities of less than 30 millicuries (1.11 ~~[~~gigabecquerels),~~]~~ ***gigabecquerels),*** or the measured dose rate at 1 meter from the patient is less than 0.005 rem (0.05 millisievert) per hour;

(b) The licensee is authorized to release the patient from confinement pursuant to ~~[~~NAC 459.256;~~]~~ ***10 C.F.R. § 35.75;*** and

(c) There are personnel in attendance who will take the necessary precautions to prevent the exposure of persons to radiation or radioactive materials in excess of the limits specified in NAC

459.325, 459.331, 459.333 and 459.335, and to maintain the level of radiation at a level which is as low as is reasonably achievable.

3. A room or area is not required to be posted with signs pursuant to NAC 459.3555 because of the presence of a sealed source of radiation if the level of radiation at 30 centimeters from the surface of the container or housing for the sealed source does not exceed 0.005 rem (0.05 millisievert) per hour.

4. A room in a hospital or clinic that is used for teletherapy is not required to be posted with signs pursuant to NAC 459.3555 if ~~[~~:

~~(a) The licensee controls access to the room as required by NAC 459.3901; and~~

~~(b) There~~~~]~~ ***there*** are personnel in attendance who will take the necessary precautions to prevent the exposure of any person to radiation or radioactive materials in excess of the limits established in NAC 459.325, 459.331, 459.333 and 459.335, and to maintain the level of radiation at a level that is as low as is reasonably achievable.

Sec. 78. NAC 459.554 is hereby amended to read as follows:

459.554 1. Except for patients who cannot be moved out of the room, only the staff and ancillary personnel required for the medical procedure or training may be in the room during the radiographic exposure. Other than the patient being examined:

(a) All persons must be positioned so that no part of the body which is not protected by 0.5 mm lead equivalent will be struck by the useful beam.

(b) Staff and ancillary personnel must be protected from the direct scatter radiation by protective aprons or whole body protective barriers of not less than 0.25 mm lead equivalent.

(c) A patient who cannot be removed from the room must be protected from the direct scatter radiation by a whole body protective barrier of 0.25 mm lead equivalent or be so positioned that

the nearest portion of the body is at least 2 meters from both the tube head and the nearest edge of the image receptor.

(d) When a portion of the body of any member of the staff or ancillary personnel is potentially subjected to stray radiation which could result in his receiving ~~[one-quarter]~~ ***10 percent*** of the maximum permissible dose, as defined in NAC 459.320 to 459.374, inclusive, additional protective devices must be employed.

2. Gonadal shielding of not less than 0.25 mm lead equivalent must be used for potentially procreative patients during radiographic procedures in which the gonads are in the direct or useful beam, except for cases in which this would interfere with the diagnostic procedure.

3. Persons must not be exposed to the useful beam except for the purposes of the healing arts where each exposure has been authorized by a licensed practitioner of the healing arts. This provision specifically prohibits deliberate exposure for the following purposes:

(a) Exposure of a person for training, demonstration or other purposes unless there are also healing arts requirements and proper prescription has been provided.

(b) Exposure of a person for the purpose of healing arts screening without prior written approval of the Division. Screening means an exposure of a person without a prior examination by a licensed practitioner.

4. When a patient or film must be provided with auxiliary support during a radiation exposure:

(a) Mechanical holding devices must be used when the technique permits. The safety rules, required by NAC 459.552 to 459.558, inclusive, must include individual protections where holding devices cannot be utilized;

(b) Written safety procedures required by subsection 5 of NAC 459.552 must indicate the requirements for selecting a holder and include the procedure the holder must follow;

(c) The human holder must be protected as required by subsection 1;

(d) No person may be used routinely to hold film or patients;

(e) In those cases where the patient must hold the film, except during intraoral examinations, any portion of the body other than the area of clinical interest struck by the useful beam must be protected by not less than 0.5 mm lead equivalent material; and

(f) Such holding is permitted only in very unusual and rare situations.

Sec. 79. NAC 459.0272, 459.0514, 459.0648, 459.0649, 459.0786, 459.105, 459.1165, 459.2432, 459.2436, 459.2445, 459.2447, 459.245, 459.247, 459.2481, 459.249, 459.250, 459.253, 459.255, 459.256, 459.2571, 459.2572, 459.2573, 459.2574, 459.2575, 459.2576, 459.258, 459.269, 459.3162, 459.3807, 459.381, 459.3815, 459.3816, 459.3817, 459.3818, 459.3821, 459.3824, 459.3827, 459.383, 459.3835, 459.3841, 459.3845, 459.3851, 459.3855, 459.3861, 459.3864, 459.3867, 459.3871, 459.3875, 459.3881, 459.3884, 459.3887, 459.3891, 459.3895, 459.3901, 459.3905, 459.3911, 459.3914, 459.3917, 459.392, 459.3924, 459.3927, 459.393, 459.3935, 459.394, 459.3942, 459.3944, 459.3946, 459.3948, 459.395, 459.3952, 459.3954, 459.3956, 459.3958, 459.3959, 459.396, 459.3961, 459.3962, 459.3964 and 459.3966 are hereby repealed.

TEXT OF REPEALED SECTIONS

459.0272 "Dedicated check source" defined. (NRS 459.201) "Dedicated check source" means a radioactive source that is used to assure the constant operation of a radiation detection or measurement device over several months or years.

459.0514 "Misadministration" defined. (NRS 459.201) "Misadministration" means the administration of:

1. A dosage greater than 30 microcuries of sodium iodide containing iodine-125 or iodine-131, if:

(a) The administration is:

(1) To a natural person other than the natural person intended by the prescribing physician; or

(2) Of a radiopharmaceutical other than that intended by the prescribing physician; or

(b) The administered dosage differs from the prescribed dosage by more than 20 percent, and the difference between the administered dosage and the prescribed dosage is more than 30 microcuries;

2. A therapeutic dosage of a radiopharmaceutical other than sodium iodide containing iodine-131, if:

(a) The administration is:

(1) To a natural person other than the natural person intended by the prescribing physician;

(2) Of a radiopharmaceutical other than that intended by the prescribing physician; or

(3) By a route of administration other than that intended by the prescribing physician; or

(b) The administered dosage differs from the prescribed dosage by more than 20 percent of the prescribed dosage;

3. A dose of gamma radiation during stereotactic radiosurgery, if:

(a) The administration is:

(1) To a natural person other than the natural person intended by the prescribing physician; or

(2) At a site other than the site of treatment intended by the prescribing physician; or

(b) The calculated total administered dose differs from the total prescribed dose by more than 10 percent of the total prescribed dose;

4. A dose of radiation during teletherapy, if:

(a) The administration is:

(1) To a natural person other than the natural person intended by the prescribing physician;

(2) By a mode of treatment other than that intended by the prescribing physician; or

(3) At a site other than the site of treatment intended by the prescribing physician;

(b) The treatment consists of three or fewer fractions and the calculated total administered dose differs from the total prescribed dose by more than 10 percent of the total prescribed dose;

(c) The calculated weekly administered dose exceeds the weekly prescribed dose by 30 percent or more of the weekly prescribed dose; or

(d) The calculated total administered dose differs from the total prescribed dose by more than 20 percent of the total prescribed dose;

5. A dose of radiation during brachytherapy, if:

(a) The administration is:

(1) To a natural person other than the natural person intended by the prescribing physician;

(2) Of a radioisotope other than that intended by the prescribing physician;

(3) At a site other than the site of treatment intended by the prescribing physician, except for permanent implants where seeds planted in the intended site migrate outside that site;

(4) Of a sealed source that leaks; or

(5) Of a temporary implant and one or more sealed sources are not removed upon completion of the procedure; or

(b) The calculated administered dose differs from the prescribed dose by more than 20 percent of the prescribed dose; or

6. A diagnostic dosage of a radiopharmaceutical, other than a quantity that exceeds 30 microcuries of sodium iodide containing iodine-125 or iodine-131, if the effective dose equivalent to the natural person exceeds 5 rems, or the dose equivalent to any organ exceeds 50 rems, and:

(a) The administration is:

(1) To a natural person other than the natural person intended by the prescribing physician;

(2) Of a radiopharmaceutical other than that intended by the prescribing physician; or

(3) By a route of administration other than that intended by the prescribing physician; or

(b) The administered dosage differs from the prescribed dosage.

459.0648 "Prescribed dosage" defined. (NRS 459.201) "Prescribed dosage" means the quantity of radiopharmaceutical activity set forth in:

1. A written directive for the administration of the radiopharmaceutical;

2. A written description of the diagnostic clinical procedure pursuant to which the radiopharmaceutical is administered, if the description:

(a) Is contained in a manual of descriptions, instructions and precautions for the performance of diagnostic clinical procedures by licensees;

(b) Has been approved by the prescribing physician; and

(c) Contains the radiopharmaceutical, dosage and route of administration prescribed; or

3. Any other appropriate documentation of the diagnostic procedure pursuant to which the radiopharmaceutical is administered, which is prepared in accordance with the directions of the prescribing physician.

459.0649 "Prescribed dose" defined. (NRS 459.201) "Prescribed dose" means, for the administration of:

1. Gamma radiation during stereotactic radiosurgery, the total dose set forth in the written directive for the administration.

2. Radiation during teletherapy, the total dose and dose per fraction set forth in the written directive for the administration.

3. Radiation during brachytherapy:

(a) The total source strength and time of exposure; or

(b) The total dose,

➥ set forth in the written directive for the administration.

459.0786 "Recordable event" defined. (NRS 459.201) "Recordable event" means the administration of:

1. A dosage of a radiopharmaceutical or a dose of radiation, for which a written directive is required, without:

(a) A written directive for the administration; or

(b) A daily entry of the administered dosage or dose in the appropriate record;

2. A dosage greater than 30 microcuries of sodium iodide containing iodine-125 or iodine-131, if:

(a) The administered dosage differs from the prescribed dosage by more than 10 percent of the prescribed dosage; and

(b) The difference between the administered dosage and the prescribed dosage is more than 15 microcuries;

3. A therapeutic dosage of a radiopharmaceutical other than sodium iodide containing iodine-131, if the administered dosage differs from the prescribed dosage by more than 10 percent of the prescribed dosage;

4. A dose of radiation during teletherapy, if the calculated weekly administered dose exceeds the weekly prescribed dose by 15 percent or more of the weekly prescribed dose; or

5. A dose of radiation during brachytherapy, if the calculated administered dose differs from the prescribed dose by more than 10 percent of the prescribed dose.

459.105 "Teletherapy physicist" defined. (NRS 459.201) "Teletherapy physicist" means the person identified as the teletherapy physicist on a license.

459.1165 "Written directive" defined. (NRS 459.201) "Written directive" means a written order for the administration of a radiopharmaceutical or radiation to a specific patient or human research subject that:

1. Is dated and signed by an authorized user before the administration and:

(a) For the administration of a quantity greater than 30 microcuries of sodium iodide containing iodine-125 or iodine-131, contains the dosage prescribed.

(b) For the therapeutic administration of a radiopharmaceutical other than sodium iodide containing iodine-131, contains the radiopharmaceutical, dosage and route of administration prescribed.

(c) For the administration of gamma radiation during stereotactic radiosurgery, contains the target coordinates, collimator size, plug pattern and total dose prescribed.

(d) For the administration of radiation during teletherapy, contains the total dose, dose per fraction, site of treatment and overall period of treatment prescribed.

(e) For the administration of radiation during brachytherapy by remote afterloading at a high dose rate, contains the radioisotope, site of treatment and total dose prescribed.

2. For the administration of radiation during any brachytherapy other than that described in paragraph (e) of subsection 1, contains:

(a) Before implantation, the radioisotope, number of sources and source strengths prescribed.

(b) After implantation and before completion of the procedure, the radioisotope and site of treatment prescribed, and:

(1) The total source strength and time of exposure prescribed; or

(2) The total dose prescribed.

459.2432 Specific licenses: License required for medical use of radioactive material. (NRS 459.201)

1. Except as otherwise provided in subsections 2 and 3, a person shall not manufacture, produce, acquire, receive, possess, use or transfer radioactive material for medical use unless that person is licensed to perform such activities by:

(a) The Division;

(b) The Nuclear Regulatory Commission; or

(c) An agreement state.

2. A person may receive, possess, use or transfer radioactive material for medical use under the supervision of an authorized user as set forth in NAC 459.3816.

3. A person may prepare unsealed radioactive material for medical use under the supervision of:

(a) An authorized user as set forth in NAC 459.3816; or

(b) An authorized nuclear pharmacist as set forth in NAC 459.3817.

459.2436 Specific licenses: Application for, amendment to or renewal of license for medical use of radioactive material within medical facility. (NRS 459.201) An application for a license, amendment to a license or renewal of a license for medical use of radioactive material within a medical facility must be made by the management of the medical facility.

459.2445 Specific licenses: Restrictions on medical uses of radioactive material. (NRS 459.201) A licensee may use for medical use of radioactive material only:

1. Teletherapy sources manufactured and distributed in accordance with a license issued:

(a) Pursuant to 10 C.F.R. Part 30, as those provisions existed on January 26, 1999; or

(b) By an agreement state.

2. Sealed sources or devices manufactured, labeled, packaged and distributed in accordance with a license issued:

(a) Pursuant to 10 C.F.R. Part 30 and 10 C.F.R. § 32.74, as those provisions existed on January 26, 1999; or

(b) By an agreement state.

459.2447 Specific licenses: Use of instrument to measure radioactivity of alpha- or beta-emitting radionuclides. (NRS 459.201)

1. Except as otherwise provided in subsection 2, a licensee shall:

(a) Possess and use an instrument to measure the radioactivity of alpha- or beta-emitting radionuclides;

(b) Have procedures for the use of the instrument described in paragraph (a);

(c) Measure, by direct measurement or by a combination of measurements and calculations, the amount of radioactivity in dosages of alpha- or beta-emitting radionuclides before administration to each patient or human research subject;

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

(e) Check each instrument described in paragraph (a) that the licensee possesses for constancy and proper operation at the beginning of each day of use.

2. The provisions of subsection 1 do not apply to unit dosages of alpha- or beta-emitting radionuclides that are obtained from a manufacturer or preparer licensed:

(a) Pursuant to 10 C.F.R. § 32.72, as those provisions existed on January 26, 1999; or

(b) By an agreement state.

459.245 Specific licenses: Conditions of and limitations upon medical uses of radioactive material; checks and tests of dose calibrators. (NRS 459.201)

1. A licensee who is authorized for any medical use of radioactive material shall use for medical purposes only:

(a) Sealed sources or devices manufactured, labeled, packaged and distributed in accordance with a license issued by the Nuclear Regulatory Commission pursuant to 10 C.F.R. Part 30 and 10 C.F.R. § 32.74, as those provisions existed on January 26, 1999, or the equivalent regulations of an agreement state.

(b) Teletherapy sources manufactured and distributed in accordance with a license issued by the Nuclear Regulatory Commission pursuant to 10 C.F.R. Part 30, as those provisions existed on January 26, 1999, or the equivalent regulations of an agreement state.

2. A licensee authorized to use and administer radiopharmaceuticals shall have in his possession a dose calibrator and use it to measure:

(a) The amount of activity of the photon-emitting radionuclide in each radiopharmaceutical dosage immediately before administration to a patient or human research subject.

(b) By direct measurement or by a combination of measurements and calculations, the activity of each dosage of an alpha- or a beta-emitting radionuclide before medical use of radioactive material, except for unit dosages obtained from a manufacturer or preparer licensed pursuant to 10 C.F.R. § 32.72, as those provisions existed on January 26, 1999, or the equivalent requirements of an agreement state.

3. A licensee shall retain a record of the measurements required by this section for at least 3 years. The record must contain the:

(a) Generic name, trade name or abbreviation of the radiopharmaceutical;

(b) Lot number, expiration date and name of the radionuclide;

(c) Name and, if applicable, the identification number of the patient or human research subject;

(d) Prescribed dosage and activity of the dosage at the time of measurement or a notation that the total activity is less than 30 microcuries;

(e) Date and time of the measurement; and

(f) Initials of the person who made the record.

4. A licensee shall:

(a) Check each dose calibrator for constancy with a dedicated check source at the beginning of each day of use. To satisfy the requirement of this paragraph, the check must be done on a frequently used setting with a sealed source of not less than 10 microcuries of radium-226 or 50 microcuries of any photon-emitting radionuclide.

(b) Test each dose calibrator for accuracy upon installation and at least annually thereafter by assaying at least two sealed sources containing different radionuclides whose activity the manufacturer has determined to be within 5 percent of its stated activity, whose activity is at least 10 microcuries for radium-226 and 50 microcuries for any other photon-emitting radionuclide, and at least one of which has a principle photon energy between 100 keV and 500 keV.

(c) Test each dose calibrator for linearity upon installation and at least quarterly thereafter over the range of its use between the highest dosage that will be administered to a patient or human research subject and 10 microcuries.

(d) Test each dose calibrator for geometry dependence upon installation over the range of volumes and volume configurations for which it will be used. The licensee shall keep a record of this test for the duration of the use of the dose calibrator.

5. A licensee shall also perform appropriate checks and tests required by this section following adjustment or repair of the dose calibrator.

6. A licensee shall mathematically correct the dosage reading for any geometry or linearity error that exceeds 10 percent if the dosage is greater than 10 microcuries and shall repair or replace the dose calibrator if the accuracy or constancy error exceeds 10 percent.

7. Except as otherwise provided in paragraph (d) of subsection 4, a licensee shall retain a record of each check and test required by this section for at least 3 years unless directed otherwise by the Division. The records of the checks and tests required by subsection 4 must include:

(a) For paragraph (a) of subsection 4, the model and serial number of the dose calibrator, the identity of the radionuclide contained in the check source, the date of the check, the activity measured and the initials of the person who performed the check;

(b) For paragraph (b) of subsection 4, the model and serial number of the dose calibrator, the model and serial number of each source used, the identity of the radionuclide contained in the source and its activity, the date of the test, the results of the test and the initials of the person who performed the check;

(c) For paragraph (c) of subsection 4, the model and serial number of the dose calibrator, the calculated activities, the measured activities, the date of the test and the initials of the person who performed the check; and

(d) For paragraph (d) of subsection 4, the model and serial number of the dose calibrator, the configuration of the source measured, the activity measured for each volume measured, the date of the test and the initials of the person who performed the check.

459.247 Specific licenses: Unsealed radioactive material prepared for medical use for uptake, dilution or excretion studies. (NRS 459.201)

1. A licensee may use for uptake, dilution or excretion studies any unsealed radioactive material prepared for medical use that is:

(a) Obtained from a manufacturer or preparer licensed pursuant to 10 C.F.R. § 32.72, as those provisions existed on January 26, 1999, or the equivalent requirements of an agreement state; or

(b) Prepared by:

(1) An authorized nuclear pharmacist;

(2) An authorized user who meets the requirements set forth in NAC 459.3946; or

(3) A person supervised by the authorized nuclear pharmacist or authorized user.

2. A licensee authorized to use radioactive material for uptake, dilution and excretion studies shall have in his possession a portable radiation detection survey instrument capable of detecting dose rates ranging from 0.1 millirem per hour to 100 millirem per hour.

459.2481 Specific licenses: Unsealed radioactive material prepared for medical use for imaging and localization studies. (NRS 459.201)

1. A licensee may use for imaging and localization studies any unsealed radioactive material prepared for medical use that is:

(a) Obtained from a manufacturer or preparer licensed pursuant to 10 C.F.R. § 32.72, as those provisions existed on January 26, 1999, or the equivalent requirements of an agreement state; or

(b) Prepared by:

(1) An authorized nuclear pharmacist;

(2) An authorized user who meets the requirements set forth in NAC 459.3946; or

(3) A person supervised by the authorized nuclear pharmacist or physician.

2. A licensee shall not administer to humans a radiopharmaceutical containing more than 0.15 microcurie of molybdenum-99 per millicurie of technetium-99m.

3. A licensee who uses molybdenum-99/technetium-99m generators for preparing a technetium-99m radiopharmaceutical shall measure the molybdenum-99 concentration in each eluate or extract.

4. A licensee who is required to measure molybdenum concentration pursuant to subsection 3 shall retain a record of each measurement for at least 3 years. The record must include, for each elution or extraction of technetium-99m:

(a) The measured activity of the technetium expressed in millicuries;

(b) The measured activity of the molybdenum expressed in microcuries;

(c) The ratio of the measures expressed as microcuries of the molybdenum per millicurie of the technetium;

(d) The time and date of the measurement; and

(e) The initials of the person who made the measurement.

5. A licensee who is authorized to use radioactive material for imaging and localization studies shall have in his possession a portable radiation detection survey instrument capable of detecting dose rates ranging from 0.1 millirem per hour to 100 millirem per hour and a portable radiation measurement survey instrument capable of measuring dose rates ranging from 1 millirem per hour to 1,000 millirem per hour.

459.249 Specific licenses: Medical use of check, calibration and reference sources. (NRS 459.201)

1. A licensee who is authorized for medical use of radioactive material may receive, possess, and use as check, calibration or reference sources:

(a) Any sealed source containing radioactive material, except radium and transuranic isotopes, which is manufactured and distributed by a person licensed by the Nuclear Regulatory Commission pursuant to § 32.74 of 10 C.F.R. Part 32, or equivalent agreement state regulations, if the activity of the source does not exceed 15 millicuries. A sealed source containing radium-226 may be used if its activity does not exceed 20 microcuries.

(b) Any radioactive material listed in NAC 459.247 or 459.2481, which has a half-life of less than 100 days, in individual amounts not to exceed 15 millicuries.

(c) Any radioactive material listed in NAC 459.247 or 459.2481, which has a half-life of longer than 100 days, in individual amounts not to exceed 200 microcuries.

(d) Technetium-99m, in individual amounts not to exceed 50 millicuries.

2. A licensee who possesses and uses a source or device containing radioactive material shall:

(a) Have each source or device tested for leakage of radioactive material in accordance with NAC 459.307.

(b) Follow the instructions on radiation safety and handling which are approved by the Division, the Nuclear Regulatory Commission or an agreement state and furnished by the manufacturer on the label attached to the source, device or permanent container or in the leaflet or brochure which accompanies the source or device and maintain such instruction in a legible and conveniently available form.

(c) Conduct a quarterly physical inventory of all sources and devices received and possessed and keep records of the inventory for inspection by the Division. The records must include:

(1) The quantities and kinds of radioactive material;

(2) The location of sources and devices; and

(3) The date of the inventory.

459.250 Specific licenses: In vitro uses. (NRS 459.201) Any licensee who is licensed pursuant to NAC 459.240, 459.242, or 459.258 is also authorized to use radioactive material under the general license in NAC 459.228 for the specified in vitro uses without filing division form NRC-8 as required by NAC 459.230. The licensee is subject to the other provisions of NAC 459.228.

459.253 Specific licenses: Use of sources for topical, interstitial or intracavitary medical treatment. (NRS 459.201)

1. A licensee shall use the following sources in accordance with the manufacturer's radiation safety and handling instructions:

(a) Cesium-137, as a sealed source in needles and applicator cells for topical, interstitial, and intracavitary treatment of cancer.

(b) Cobalt-60, as a sealed source in needles and applicator cells for topical, interstitial, and intracavitary treatment of cancer.

(c) Gold-198, as a sealed source in seeds for interstitial treatment of cancer.

(d) Strontium-90, as a sealed source in an applicator for treatment of superficial eye conditions.

(e) Iodine-125, as a sealed source in seeds for interstitial treatment of cancer.

(f) Radon-222, as a sealed source in seeds for interstitial and intracavitary treatment of cancer.

(g) Radium-226, as a sealed source for topical, interstitial, and intracavitary treatment of cancer.

(h) Iridium-192, as seeds encased in nylon ribbon for interstitial treatment of cancer.

(i) Palladium-103, as a sealed source in seeds for interstitial treatment of cancer.

2. A licensee who is authorized to use radioactive material for implant therapy shall have in his possession a portable radiation detection survey instrument capable of detecting dose rates ranging from 0.1 millirem per hour to 100 millirem per hour and a portable radiation measurement survey instrument capable of measuring dose rates ranging from 1 millirem per hour to 1,000 millirem per hour.

3. A licensee shall ensure that needles or standard medical applicator cells containing radium-226 or cobalt-60 as wire are not opened while in the licensee's possession unless the licensee is specifically authorized to open them under a license issued to him by the Division.

459.255 Specific licenses: Use of radiopharmaceuticals for therapy. (NRS 459.201)

1. A licensee may use any unsealed radioactive material prepared for medical use that is:

(a) Obtained from a manufacturer or preparer licensed pursuant to 10 C.F.R. § 32.72, as those provisions existed on January 26, 1999, or the equivalent requirements of an agreement state; or

(b) Prepared by:

(1) An authorized nuclear pharmacist;

(2) An authorized user who meets the requirements of NAC 459.3946; or

(3) A person supervised by the authorized nuclear pharmacist or physician.

2. A licensee who is authorized to use radioactive material for radiopharmaceutical therapy shall have in his possession a portable radiation detection survey instrument capable of detecting dose rates ranging from 0.1 millirem per hour to 100 millirem per hour and a portable radiation measurement survey instrument capable of measuring dose rates ranging from 1 millirem per hour to 1,000 millirem per hour.

459.256 Specific licenses: Release of natural person given radiopharmaceutical or radioactive implants; calculation of total effective dose equivalent; provision of information to limit exposure of other persons to radiation emitted from natural person; conduct of radiation surveys; records. (NRS 459.030, 459.201)

1. A licensee may authorize the release from its control of a natural person who has been administered a radiopharmaceutical, or a permanent implant that contains radioactive material, if the total effective dose equivalent to any other natural person from exposure to the person released is not likely to exceed 0.5 rem (5 millisieverts).

2. A licensee may use any scientifically accepted method to calculate the total effective dose equivalent likely to be received by a natural person from a person released pursuant to subsection 1, including, without limitation, any method set forth in the Regulatory Guide 8.39 issued by the Nuclear Regulatory Commission entitled “Release of Patients Administered Radioactive Materials.” If a licensee authorizes the release from its control of a person on the basis of a total effective dose equivalent that is calculated by a method using:

(a) The retained activity rather than the activity administered;

(b) An occupancy factor that is less than 0.25 at 1 meter;

(c) The biological or effective half-life of the radiopharmaceutical or radioactive material; or

(d) Considerations of the amount of shielding provided by tissue,

➥ the licensee shall maintain, for not less than 3 years after the date of release, a record of the basis for authorizing the release of the person.

3. If the total effective dose equivalent to any other person from exposure to a natural person released from the control of a licensee pursuant to subsection 1 is likely to exceed 0.1 rem (1 millisievert), the licensee shall provide verbal and written instructions to the natural person concerning actions recommended by the Division to maintain doses to which other persons may be exposed from the radiation emitted from the natural person to levels that are as low as is reasonably achievable.

4. If a licensee has reason to believe that a person released from its control pursuant to subsection 1 may expose an infant or child, by breast-feeding, to a total effective dose equivalent that is likely to exceed 0.1 rem (1 millisievert), the instructions provided pursuant to subsection 3 must include:

(a) Guidance on the interruption or discontinuation of breast-feeding; and

(b) Information on the consequences of failure to follow such guidance.

➥ If the exposure to an infant or child from breast-feeding is likely to exceed 0.5 rem (5 millisieverts), the licensee shall maintain, for not less than 3 years after the date of release, a record that these instructions were provided.

5. Immediately after removing the last temporary implant source from a natural person, the licensee shall make a radiation survey of the natural person with a radiation detection survey instrument to confirm that all sources have been removed.

6. A licensee shall not release from its control a natural person treated by temporary implant until all sources have been removed.

7. A licensee shall retain a record of the survey of natural persons for at least 3 years. Each record must include:

(a) The date of the survey;

(b) The name of the natural person;

(c) The dose rate from the natural person expressed as millirem (millisievert) per hour and measured at 1 meter from the natural person;

(d) The identity of the survey instrument used; and

(e) The initials of the person who made the survey.

8. Using the survey data required pursuant to subsection 7, the licensee shall calculate the total effective dose equivalent that a person who resides in the same house as the natural person is likely to receive from the natural person. If the licensee calculates that the total effective dose equivalent to any person from exposure to the released natural person could exceed 100 millirems (1 millisievert) in 1 year unless certain precautions are taken, the licensee shall provide verbal and written instructions to the natural person, which, if carefully followed by the natural person, should limit the exposure of other persons to the radiation emitted from the natural person to less than 100 millirems (1 millisievert) per year. If the natural person appears to have difficulty in understanding the instructions, the licensee shall contact a member of the family of the natural person, his guardian or other representative until a person is found who can communicate the meaning of the instructions to the natural person.

9. The licensee shall maintain for at least 3 years the records of a released natural person which must include a copy of the written instructions and the calculated total effective dose equivalent to the person likely to receive the highest dose.

459.2571 Specific licenses: Written directives required for certain administrations; exceptions. (NRS 459.201)

1. A written directive is required for each:

(a) Administration of a dose of radiation during teletherapy;

(b) Administration of a dose of gamma radiation during stereotactic radiosurgery;

(c) Administration of a dose of radiation during brachytherapy;

(d) Administration of a quantity greater than 30 microcuries of sodium iodide containing iodine-125 or iodine-131; or

(e) Therapeutic administration of a radiopharmaceutical other than sodium iodide containing iodine-131.

2. If a written directive is required for an administration, the prescribing physician shall, before the administration occurs:

(a) Prepare, date and sign a written directive for the administration, unless:

(1) Because of the emergent nature of the condition of the patient or human research subject, the delay required to prepare the written directive would place the health of the patient or human research subject in jeopardy;

(2) An oral directive for the administration is made and immediately written in the record of the patient or human research subject; and

(3) The prescribing physician prepares, dates and signs a written directive for the administration within 24 hours after the oral directive is made; or

(b) Date and sign a written revision to an existing written directive for a diagnostic or therapeutic procedure, unless:

(1) Because of the condition of the patient or human research subject, the delay required to prepare the written revision would place the health of the patient or human research subject in jeopardy;

(2) An oral revision of the existing written directive is made and immediately written in the record of the patient or human research subject; and

(3) The prescribing physician signs a revised written directive within 48 hours after the oral revision is made.

459.2572 Specific licenses: Written program of policies and procedures required; modification of written program; submission of written program with application for license. (NRS 459.201)

1. The holder of a specific license for a medical use of radioactive material shall establish and carry out a written program to ensure that radioactive material and radiation from radioactive material is administered as directed by the prescribing physician. The program must include written policies and procedures to ensure that:

(a) The prescribing physician complies with the provisions of NAC 459.2571.

(b) Before each administration occurs, the identity of the patient or human research subject is verified, by two or more methods, as the person named in the written directive for the administration.

(c) The final plan of treatment and related calculations for any brachytherapy, teletherapy or stereotactic radiosurgery by gamma radiation are in accordance with the written directive for the administration.

(d) Each administration is made in accordance with the written directive for the administration.

(e) Any unintended deviation from a written directive is identified and evaluated, and appropriate action taken.

2. The licensee may modify the program established pursuant to subsection 1 to increase the efficiency of the program if:

(a) The modification will not result in a decrease in the efficiency of the program; and

(b) He provides the Division with a copy of the modification within 30 days after the modification is made.

3. An applicant for a specific license for a medical use of radioactive material shall submit to the Division, as part of his application for such a license, a written program that complies with the requirements of subsection 1.

459.2573 Specific licenses: Mandatory review and evaluation of written program. (NRS 459.201) A licensee shall:

1. Develop a procedure for and, at intervals not to exceed every 12 months, conduct a review of the program he establishes pursuant to NAC 459.2572. Each review must include an evaluation of:

(a) A representative sample of administrations to patients or human research subjects;

(b) All recordable events; and

(c) All misadministrations,

➥ in which he was involved since the most recent review, to verify compliance with all aspects of the program.

2. Evaluate each review to determine the effectiveness of the program and, if necessary, modify the program so that it complies with the requirements of NAC 459.2572.

459.2574 Specific licenses: Duties upon discovery of recordable event. (NRS 459.201) A licensee involved in a recordable event shall, within 30 days after he discovers the recordable event, evaluate and respond to the recordable event by identifying:

1. All relevant facts, including the cause of the recordable event; and

2. Any corrective action necessary to prevent a recurrence.

459.2575 Specific licenses: Notifications and reports of medical misadministrations; medical care for natural person. (NRS 459.201)

1. A licensee involved in a misadministration shall:

(a) No later than the next calendar day after he discovers the misadministration, notify the Division of the misadministration by telephone.

(b) No later than 24 hours after he discovers the misadministration, notify the referring physician of the misadministration.

(c) No later than 24 hours after he discovers the misadministration, notify the natural person who received the misadministration, or a relative or guardian responsible for the natural person, of the misadministration, except that:

(1) He is not required to provide that notification without first consulting with the referring physician or if the referring physician personally informs him that:

(I) The referring physician will provide the notification; or

(II) Based upon the medical judgment of the referring physician, such a notification would be harmful.

(2) He is not required to provide that notification within 24 hours if:

(I) The referring physician, natural person who received the misadministration, relative or guardian cannot be reached within that time; and

(II) He provides that notification as soon as possible thereafter.

(d) Within 15 days after he discovers the misadministration, submit to the Division a written report of the misadministration. The report must state:

(1) The name of the licensee;

(2) The name of the prescribing physician;

(3) A brief description of the misadministration;

(4) The reason the misadministration occurred;

(5) The effect of the misadministration on the natural person who received it;

(6) Any corrective action taken to prevent a recurrence; and

(7) Whether the licensee notified the natural person who received the misadministration, or a relative or guardian responsible for the natural person, of the misadministration and:

(I) If not, the reason for not doing so; or

(II) If so, the information provided to the natural person, relative or guardian.

➥ The report must not include the name of the natural person who received the misadministration or any other information that could lead to the identification of that natural person.

(e) Within 15 days after he discovers the misadministration, submit to a natural person, relative or guardian who received notification of the misadministration pursuant to paragraph (c), a written report of the misadministration. The report must consist of:

(1) A copy of the report submitted to the Division pursuant to paragraph (d); or

(2) A brief description of the misadministration and the possible effects on the natural person who received it, and a statement that the report submitted to the Division pursuant to paragraph (d) may be obtained from the licensee.

2. A licensee shall not delay any appropriate medical care for a natural person, including, without limitation, any remedial care required as a result of a misadministration, because of any delay required to carry out this section.

3. Except for the specific requirements of this section regarding notification, nothing in this section affects the respective rights and duties of any licensee or physician with regard to each other, a natural person, or any relative or guardian responsible for a natural person.

459.2576 Specific licenses: Records of written directives, administrations and misadministrations. (NRS 459.201) A licensee shall:

1. Retain a copy of each written directive with which he is involved for at least 3 years following the date of administration.

2. Prepare a record of each administration of a dosage of a radiopharmaceutical or dose of radiation:

(a) In which he is involved; and

(b) For which a written directive is required,

➥ and retain the record for at least 3 years following the date of administration in a form that can be audited.

3. Prepare a record of each review the licensee conducts pursuant to NAC 459.2573 which includes, without limitation, the evaluation and findings of each review, and retain the record for at least 3 years in a form that can be audited.

4. Prepare a record of the relevant facts regarding, and any corrective action taken to prevent the recurrence of, a recordable event in which the licensee is involved, and retain the record for at least 3 years in a form that can be audited.

5. Prepare, and retain for at least 5 years, a record of each misadministration in which the licensee is involved. The record must contain:

(a) The name of each person involved in the misadministration, including, without limitation, the natural person who received the misadministration, the referring physician, the prescribing physician and any allied health personnel;

(b) The social security number or other number identifying the natural person who received the misadministration, if one has been assigned; and

(c) A brief description of:

(1) The misadministration;

(2) The reason the misadministration occurred;

(3) The effect of the misadministration on the natural person who received it;

(4) Any corrective action necessary to prevent a recurrence; and

(5) Any corrective action taken to prevent a recurrence.

459.258 Specific licenses: Human use of sealed sources. (NRS 459.201) In addition to the requirements in NAC 459.238, a specific license for human use of sealed sources will be issued only if the applicant or, if the application is made by an institution, the individual user is a physician who:

1. Has specialized training in diagnostic or therapeutic use of the sealed source considered; or

2. Has experience equivalent to such training.

459.269 Broad licenses: Exemptions regarding type A specific license of broad scope. (NRS 459.201) A licensee with a type A specific license of broad scope for medical use is exempt from the provisions of:

1. Paragraphs (a) and (b) of subsection 4 of NAC 459.381; and

2. Subsections 1 and 2 of NAC 459.3815.

459.3162 "Constraint" defined. (NRS 459.030) "Constraint" has the meaning ascribed to it in 10 C.F.R. § 20.1003.

459.3807 Provisions for research involving human subjects. (NRS 459.201)

1. A licensee may conduct research with human subjects that involves radioactive material if the licensee complies with subsection 2 and:

(a) The research is conducted, funded, supported or regulated by an agency which has implemented the provisions of 21 C.F.R. Part 50, as those provisions existed on January 26, 1999; or

(b) The licensee has received an amendment to his license from the Division that authorizes such research.

2. A licensee shall obtain:

(a) Informed consent from each human subject; and

(b) Approval of the research by an institutional review board,

➥ before the research may be conducted.

3. As used in this section, "institutional review board" has the meaning ascribed to it in 21 C.F.R. § 50.3, as those provisions existed on January 26, 1999.

459.381 Conditions that require amendment to license. (NRS 459.201) A licensee possessing a license authorizing the use of radioactive materials in medical procedures must apply for and receive an amendment to his license before he:

1. Receives or uses any radioactive material for a clinical procedure not specifically permitted by the license.

2. Changes radiation safety officers or teletherapy physicists.

3. Orders radioactive material:

(a) In excess of the amount authorized by the license;

(b) In a form different than authorized by the license; or

(c) Not authorized by the license.

4. Adds to or changes:

(a) Any address of use;

(b) Any area of use; or

(c) Any restricted area.

459.3815 Notification of certain changes related to personnel or mailing address of licensee. (NRS 459.201) A licensee shall:

1. Notify the Division by letter within 30 days after:

(a) An authorized user, authorized nuclear pharmacist, radiation safety officer or teletherapy physicist permanently discontinues performance of his duties under the license or has a change of name; or

(b) The mailing address of the licensee changes.

2. If the licensee employs an authorized user or authorized nuclear pharmacist who is identified as such on a license issued by the Nuclear Regulatory Commission or an agreement state or on a permit issued by a licensee who holds a specific license of broad scope, provide to the Division within 30 days after the authorized user or authorized nuclear pharmacist is allowed to work as an authorized user or authorized nuclear pharmacist a copy of the license or permit.

459.3816 Duties of licensee regarding persons supervised by authorized user. (NRS 459.201) A licensee who employs an authorized user who:

1. Supervises the manufacture, production, acquisition, possession, use or transfer of radioactive material for medical use by a person shall:

(a) Instruct the person supervised in:

(1) The principles of radiation safety appropriate to the use of radioactive material by the person; and

(2) The written quality management program of the licensee.

(b) Require the person supervised to:

(1) Follow the instructions of the authorized user;

(2) Follow the written radiation safety and quality management procedures established by the licensee;

(3) Comply with the provisions of NAC 459.010 to 459.950, inclusive; and

(4) Comply with the conditions of the license of the licensee with respect to the use of the radioactive material.

(c) Review periodically the use of the radioactive material by the person supervised and the records that reflect the use of the radioactive material.

2. Supervises the preparation of radioactive material for medical use by a person shall:

(a) Instruct the person supervised in:

(1) The preparation of radioactive material for medical use;

(2) The principles of radiation safety appropriate to the use of radioactive material by the person; and

(3) The written quality management program of the licensee.

(b) Require the person supervised to:

(1) Follow the instructions of the authorized user;

(2) Follow the written radiation safety and quality management procedures established by the licensee;

(3) Comply with the provisions of NAC 459.010 to 459.950, inclusive; and

(4) Comply with the conditions of the license of the licensee with respect to the preparation of the radioactive material for medical use.

(c) Require the authorized user to review periodically the preparation of the radioactive material for medical use by the person supervised and the records that reflect the preparation of the radioactive material.

459.3817 Duties of licensee regarding persons supervised by authorized nuclear pharmacist. (NRS 459.201) A licensee who employs an authorized nuclear pharmacist who supervises the preparation of radioactive material for medical use by a person shall:

1. Instruct the person supervised in:

(a) The preparation of radioactive material for medical use;

(b) The principles of radiation safety appropriate to the use of radioactive material by the person; and

(c) The written quality management program of the licensee.

2. Require the person supervised to:

(a) Follow the instructions of the authorized nuclear pharmacist;

(b) Follow the written radiation safety and quality management procedures established by the licensee;

(c) Comply with the provisions of NAC 459.010 to 459.950, inclusive; and

(d) Comply with the conditions of the license of the licensee with respect to the preparation of the radioactive material for medical use.

3. Require the authorized nuclear pharmacist to review periodically the preparation of the radioactive material for medical use by the person supervised and the records that reflect the preparation of the radioactive material.

459.3818 Responsibility for acts and omissions. (NRS 459.201) A licensee who employs an:

1. Authorized user who supervises a person pursuant to NAC 459.3816 is responsible for the acts and omissions of the authorized user and the person supervised that occur within the scope of the activity being supervised.

2. Authorized nuclear pharmacist who supervises a person pursuant to NAC 459.3817 is responsible for the acts and omissions of the authorized nuclear pharmacist and the person supervised that occur within the scope of the activity being supervised.

459.3821 Radiation safety officer: Appointment; purpose; duties. (NRS 459.201)

1. A licensee authorized to use radioactive material in medical procedures shall appoint a radiation safety officer who is responsible for implementing a program for radiation safety. The licensee, through the radiation safety officer, shall ensure that activities for radiation safety are being performed in accordance with approved procedures and regulatory requirements in the daily operations of the licensee that involve the use of radioactive materials.

2. The radiation safety officer shall:

(a) Investigate overexposures, accidents, spills, thefts, unauthorized receipts, uses, transfers, disposals, misadministrations and other deviations from approved radiation safety practices and implement corrective actions as necessary;

(b) Establish, collect in one binder or file, and implement written policies and procedures for:

(1) Authorizing the procurement of radioactive material;

(2) Receiving and opening packages of radioactive material;

(3) Storing radioactive material;

(4) Keeping an inventory of radioactive material;

(5) Safely using radioactive material;

(6) Taking action in an emergency if control of radioactive material is lost;

(7) Performing on a periodic basis surveys of radiation;

(8) Performing checks of instruments for surveying and other safety equipment;

(9) Disposing of radioactive material;

(10) Training personnel who work in restricted areas or who are otherwise occupationally exposed to radiation; and

(11) Keeping a copy of all records and reports required by NAC 459.010 to 459.950, inclusive, a copy of each licensing request, a copy of the license and all amendments thereto, a copy of the radiation protection program, and the written policies and procedures required by NAC 459.3801 to 459.3966, inclusive;

(c) Brief management at least once each year on the usage of radioactive material at the facility;

(d) Establish levels of exposure for personnel which, when exceeded, will be investigated by the radiation safety officer to determine the cause of the exposure and methods that can be used to prevent recurrence of the exposure; and

(e) If the licensee has a committee on radiation safety, assist the committee in the performance of its duties.

459.3824 Committee on radiation safety: Meetings; quorum; minutes; duties; records of minor changes in procedures for radiation safety. (NRS 459.201)

1. If established, a committee on radiation safety shall meet at least quarterly and:

(a) A quorum consisting of at least one-half of the membership of the committee, including the radiation safety officer and a representative of management, must be present to conduct a meeting.

(b) The minutes of each meeting must be recorded and include the following information:

(1) The date of the meeting;

(2) Names of members present;

(3) Names of members absent;

(4) Summary of deliberations and discussions;

(5) Recommended actions and the numerical results of all ballots; and

(6) Any reviews made of the program for radiation safety and on the adequacy of the program to keep radiation exposures as low as is reasonably achievable.

(c) Promptly provide each member with a copy of the minutes of the meeting and retain one copy for the duration of the license of the licensee.

2. To oversee the use of radioactive material, the committee shall:

(a) Review recommendations on ways to maintain individual and collective doses of radiation as low as is reasonably achievable;

(b) Review, on the basis of safety and with regard to required training and experience, standards provided in NAC 459.394 to 459.3966, inclusive, and approve or disapprove any person who is to be listed as an authorized user, an authorized nuclear pharmacist, the radiation safety officer or a teletherapy physicist before submitting an application for a license or a request for the amendment or renewal thereof;

(c) Review on the basis of safety and approve with the advice and consent of the radiation safety officer and a representative of management, or disapprove, minor changes in the procedures for radiation safety that are not potentially important to safety and that were described in the application for a license, or the renewal or amendment thereof;

(d) Review quarterly, with the assistance of the radiation safety officer, a summary of the records of the occupational dose of all personnel working with radioactive material;

(e) Review quarterly, with the assistance of the radiation safety officer, all incidents involving radioactive material to determine the cause of the incidents and recommend subsequent actions to be taken; and

(f) Review annually, with the assistance of the radiation safety officer, the program for radiation safety.

3. A licensee shall retain a record of each change made pursuant to paragraph (c) of subsection 2 until his license has been renewed or terminated. The record must include the effective date of the change, a copy of the old and new procedures for radiation safety, the reason for the change, a summary of the matters concerning radiation safety that were considered before making the change, and, if applicable, the signatures of the chairman of the committee on radiation safety, the radiation safety officer and the representative of management.

459.3827 Duties of licensee regarding radiation safety officer and committee on radiation safety. (NRS 459.201)

1. A licensee shall provide the radiation safety officer and, if established, the committee on radiation safety, sufficient authority, organizational freedom, and management prerogative to:

(a) Identify problems of radiation safety;

(b) Initiate, recommend, or provide corrective actions; and

(c) Verify that corrective actions have been taken by the licensee.

2. A licensee shall establish and state in writing the authorities, duties, responsibilities, and radiation safety activities of the radiation safety officer and the committee on radiation safety, if any, and retain a record of the current edition of the statements until the Division terminates the license.

459.383 Syringes containing radioactive material. (NRS 459.201)

1. A licensee shall keep syringes that contain radioactive material to be administered to patients or human research subjects in a radiation shield.

2. Each syringe that contains a radiopharmaceutical or each radiation shield which contains such a syringe must be conspicuously labeled by the licensee to identify its contents. The label must identify the radiopharmaceutical name or its abbreviation, the clinical procedure to be performed, or the name of the patient or human research subject.

3. A licensee shall require each person who prepares a radiopharmaceutical kit to use a syringe radiation shield when preparing the kit and administering a radiopharmaceutical by injection unless the use of the shield is contraindicated for that patient or human research subject.

459.3835 Vials containing radiopharmaceuticals. (NRS 459.201)

1. A licensee shall require each person preparing or handling a vial that contains a radiopharmaceutical to keep the vial in a radiation shield.

2. Each radiation shield that contains a vial of a radiopharmaceutical must be conspicuously labeled by the licensee to identify its contents. The label must identify the name of the radiopharmaceutical or its abbreviation.

459.3841 Radiation surveys of areas used for preparation, administration or storage of radiopharmaceuticals or waste of radiopharmaceuticals; records. (NRS 459.201)

1. At the end of each day of use a licensee shall make a radiation survey with a radiation detection survey instrument of all areas where radiopharmaceuticals are routinely prepared for use or administered.

2. A least once each week a licensee shall survey with a radiation detection survey instrument all areas where radiopharmaceuticals or the waste of radiopharmaceuticals are stored.

3. A licensee shall conduct the surveys required pursuant to subsections 1 and 2 to detect dose rates as low as 0.1 millirem per hour.

4. A licensee shall:

(a) Establish limits for rates of radiation dosage for the surveys required by subsections 1 and 2; and

(b) Require the person who performs the survey to notify the radiation safety officer immediately if the dose rate measured exceeds the established limit.

5. Once each week a licensee shall make a radiation survey for removable radioactive contamination in all areas where radiopharmaceuticals are routinely prepared for use, administered or stored.

6. A licensee shall conduct the surveys required by subsection 5 to detect a minimum radioactive contamination level on each wipe sample of 2,000 disintegrations per minute.

7. A licensee shall:

(a) Establish limits for removable radioactive contamination for the surveys required by subsection 5; and

(b) Require the person who performs the survey to inform the radiation safety officer immediately if the amount of radioactive contamination measured exceeds the established limit.

8. A licensee shall retain a record of each survey for at least 3 years. Each record must include:

(a) The date of the survey;

(b) A plan drawing of each area surveyed;

(c) The limits established for levels of radiation or radioactive contamination for each area;

(d) The detected radiation level at several points in each area expressed in millirems per hour and the removable radioactive contamination level at several points in the area expressed in disintegrations per minute per 100 square centimeters;

(e) The identity of the survey instruments used to make the survey and to analyze the wipe samples; and

(f) The initials of the person who performed the survey.

459.3845 Storage of volatile radiopharmaceuticals and radioactive gases. (NRS 459.201) A licensee shall store volatile radiopharmaceuticals and radioactive gases in a radiation shield and in the container of the shipper. A licensee shall store a multidose container in a fume hood after drawing the first dosage from it.

459.3851 Radioactive aerosols and gases; records. (NRS 459.201)

1. A licensee shall administer radioactive aerosols or gases in a room with a system that will keep airborne concentrations within the limits prescribed in Table I of Appendix B. The system must either be directly vented to the atmosphere through an air exhaust or provide for the collection and decay or disposal of the aerosol or gas in a shielded container.

2. A licensee may administer radioactive gases only in rooms that are at negative pressure compared to surrounding rooms.

3. Before receiving, using, or storing a radioactive gas, a licensee shall calculate the amount of time needed after a spill to reduce the concentration in the room to the occupational limit listed in Table I of Appendix B. The calculation must be based on the highest activity of the gas handled in a single container, the air volume of the room, and the measured available air exhaust rate.

4. A licensee shall make a record of the calculations required by subsection 3, including, but not limited to, the assumptions, measurements, and calculations made, and shall retain the record for the duration of use of the area. A licensee shall also post the calculated time and safety measures to be instituted in case of a spill in the area of use.

5. A licensee shall check the operation of reusable collection systems each month and measure the ventilation rates available in areas where radioactive gas is used every 6 months.

459.3855 Instruction for personnel caring for hospitalized patient receiving radiopharmaceutical therapy; records regarding instruction. (NRS 459.201)

1. A licensee shall provide instruction on radiation safety for all personnel caring for a patient receiving radiopharmaceutical therapy who is required to be hospitalized. The instruction must describe the procedures of the licensee for:

(a) Control of the patient;

(b) Control of visitors;

(c) Control of contamination;

(d) Control of wastes; and

(e) Notification of the radiation safety officer in case of the death of the patient or a medical emergency.

2. A licensee shall retain for at least 3 years a list of persons receiving instruction required by subsection 1, a description of the instruction, the date of instruction, and the name of the person who gave the instruction.

459.3861 Duties of licensee regarding radiopharmaceutical therapy and hospitalization of patient or human research subject; records and notification. (NRS 459.201) A licensee shall, for each patient or human research subject who is receiving radiopharmaceutical therapy and is hospitalized pursuant to NAC 459.256:

1. Provide a private room with a private sanitary facility.

2. Post on the outside of the door to the room a sign bearing the radiation symbol and the words "RADIOACTIVE MATERIALS," and post a note on the door or in the chart of the patient or human research subject describing where and how long visitors may stay in the room of the patient or human research subject.

3. Authorize visits by persons under 18 years of age only on a case-by-case basis with the approval of the authorized user after he has consulted with the radiation safety officer.

4. Promptly after administration of the dosage, measure the dose rate in the contiguous restricted and unrestricted areas with a radiation survey instrument to demonstrate compliance with the prescribed dose rates for those areas. The licensee shall retain a record of each survey for at least 3 years. Each record must include:

(a) The time and date of the survey;

(b) A plan drawing of the area or list of points surveyed;

(c) The measured dose rate at several points expressed in millirems per hour;

(d) The identity of the survey instruments used to make the survey; and

(e) The initials of the person who performed the survey.

5. Either monitor material and items removed from the room of the patient or human research subject to determine that their radioactivity cannot be distinguished from background radiation with a radiation detection instrument set on its most sensitive scale and with no interposed shielding or handle the items removed from the room of the patient or human research subject as radioactive waste.

6. Provide the patient or human research subject with guidance regarding radiation safety that will help maintain the radiation dose to household members and the public as low as reasonably achievable before authorizing the release of the patient or human research subject.

7. Survey the room and private sanitary facility of the patient or human research subject with a radiation detection instrument for removable contamination before assigning another patient or human research subject to the room. The room must not be reassigned until removable contamination is less than 200 disintegrations per minute per 100 square centimeters.

8. Measure the thyroid burden of each person who helped prepare or administer a dosage of iodine-131 within 3 days after administering the dosage. The licensee shall retain a record of the measurement which must also contain the date of measurement, the name of the person whose thyroid burden was measured and the initials of the person who made the measurements, until the Division authorizes disposition.

9. Notify the radiation safety officer immediately if the patient or human research subject dies or has a medical emergency.

459.3864 Tests for leakage, physical inventories, and radiation surveys of certain sources and areas of storage of certain sources; records. (NRS 459.030, 459.201) A licensee in possession of a sealed source, a brachytherapy source, except one containing iridium-192 encased in nylon, or a teletherapy source shall:

1. Test every source for leakage and report in accordance with the provisions of NAC 459.307 each source that is leaking. In the case of radium sources:

(a) The leak test must, when the collection efficiency for radon 222 and its decay products has been determined with respect to the method, volume and time of collection, be capable of detecting the escape of radon at the rate of 0.001 microcurie (37 bequerels) per 24 hours.

(b) If the leak test is conducted on a brachytherapy source storage container for contamination from the decay products of radium, the test must:

(1) Be taken on the interior surface of the container; and

(2) Be capable of detecting the presence of 0.005 microcurie (185 bequerels) of any decay product of radium that has a half-life greater than 4 days.

(c) If the leak test on a radium source detects the escape of radon at the rate of 0.001 microcurie (37 bequerels) or more in 24 hours, the source must be considered to be leaking.

2. Conduct a physical inventory of all sealed sources in his possession, except any teletherapy source in teletherapy units, at least quarterly. The licensee shall retain each inventory record for at least 5 years. The records of inventory must contain the model number of each source, the serial number if one has been assigned, the identity of each source radionuclide and its nominal activity, and the signature of the radiation safety officer.

3. At least quarterly, conduct with a radiation detection instrument a survey of all areas where sealed sources are stored to determine ambient dose rates. This requirement is not applicable to teletherapy sources in teletherapy units.

4. Retain a record of each survey required in subsection 3 for at least 3 years. Each record must include:

(a) The date of the survey;

(b) A plan drawing of the area that was surveyed;

(c) The measured dose rate at several points in each area expressed in millirems per hour;

(d) The identity of the survey instrument used; and

(e) The signature of the radiation safety officer.

459.3867 Calibration and check for proper operation of survey instrument used to determine ambient radiation exposure rates; records. (NRS 459.201)

1. A licensee shall calibrate a survey instrument used to determine ambient radiation exposure rates before its first use, annually, and following repair. In calibrating the survey instrument, the licensee shall:

(a) Calibrate all scales with readings up to 1,000 millirems per hour with a radiation source;

(b) Calibrate two separated readings on each scale that must be calibrated;

(c) Conspicuously attach a correction chart or graph to the instrument; and

(d) Conspicuously make a notation on the instrument of the apparent exposure rate from a dedicated check source as determined at the time of calibration and the date of calibration.

2. When calibrating a survey instrument, a point is calibrated if the indicated exposure rate differs from the calculated exposure rate by not more than 20 percent.

3. A licensee shall check each survey instrument for proper operation with the dedicated check source on each day of use. A record of such checks is not required.

4. A licensee shall retain a record of each calibration required pursuant to this section for at least 3 years. Each record must include:

(a) A description of the calibration procedure;

(b) The date of the calibration;

(c) A description of the source used and the certified exposure rate from the source;

(d) The rates indicated by the instrument being calibrated;

(e) The correction factor deduced from the calibration data; and

(f) The signature of the person who performed the calibration.

459.3871 Brachytherapy sources: Return to storage area; radiation survey after use; records. (NRS 459.201)

1. A licensee shall, after removing brachytherapy sources from a patient or human research subject, promptly return the brachytherapy sources to the storage area and count the number returned to ensure that all sources taken from the storage area have been returned.

2. A licensee shall make a record of the use of brachytherapy sources, which must include:

(a) The names of the persons permitted to handle the sources;

(b) The number and activity of sources removed from storage, the time and date they were removed from storage, the name and room number of the patient or human research subject, the number and activity of the sources in storage after the removal and the initials of the person who removed the sources from storage; and

(c) The number and activity of the sources returned to storage, the time and date they were returned to storage, the name and room number of the patient or human research subject, the number and activity of the sources in storage after the return and the initials of the person who returned the sources to storage.

3. Immediately after implanting sources in a patient or human research subject, a licensee shall make a radiation survey of the patient or human research subject and the area of use to confirm that no sources have been misplaced. The licensee shall make a record of each survey.

4. A licensee shall retain for at least 3 years the records required by subsections 2 and 3.

459.3875 Implant therapy: Instruction on radiation safety for persons caring for patient or human research subject; records regarding instruction. (NRS 459.201)

1. A licensee shall provide instruction on radiation safety to all persons caring for a patient or human research subject undergoing implant therapy. To satisfy this requirement, the instruction must describe:

(a) The size and appearance of the brachytherapy sources;

(b) Procedures for the safe handling of, and instructions for shielding in case of, a dislodged source;

(c) Procedures for patient control or human research subject control;

(d) Procedures for visitor control; and

(e) Procedures for notifying the radiation safety officer if the patient or human research subject dies or has a medical emergency.

2. A licensee shall retain for at least 3 years a record of persons receiving instruction required by subsection 1, a description of the instruction, the date of instruction and the name of the person who gave the instruction.

459.3881 Implant therapy: Duties of licensee regarding patient or human research subject. (NRS 459.030, 459.201) A licensee shall, for each patient or human research subject receiving implant therapy, but not released from the control of the licensee pursuant to NAC 459.256:

1. Ensure that the patient or human research subject is not placed in the same room with another patient or human research subject who is not receiving radiation therapy unless the licensee can demonstrate compliance with the requirements of NAC 459.335 if the dosage is measured 1 meter from the implant.

2. Post on the outside of the door to the room of the patient or human research subject a sign bearing the radiation symbol and the words “RADIOACTIVE MATERIALS,” and post a note on the door or in the chart of the patient or human research subject describing where and how long visitors may stay in the room of the patient or human research subject.

3. Authorize visits by persons under 18 years of age only on a case-by-case basis with the approval of the authorized user after he has consulted with the radiation safety officer.

4. Promptly after implanting the brachytherapy sources, survey the dose rate in contiguous restricted and unrestricted areas with a radiation survey instrument to demonstrate compliance with the limits of radiation specified for those areas. The licensee shall retain a record of each survey for at least 3 years. Each record must include:

(a) The time and date of the survey;

(b) A plan drawing of each area surveyed;

(c) The measured dose rate at several points expressed in millirems per hour;

(d) The identity of the survey instruments used to make the survey; and

(e) The initials of the person who performed the survey.

5. If the patient or human research subject was given a permanent implant, provide the patient or human research subject with radiation safety guidance that will help maintain the radiation dose to household members and the public as low as is reasonably achievable before releasing the patient or human research subject.

6. Notify the radiation safety officer immediately if the patient or human research subject dies or has a medical emergency.

459.3884 Teletherapy: Scope of provisions. (NRS 459.201) The provisions of NAC 459.3887 to 459.3935, inclusive, govern the use of teletherapy units for medical use that contain a sealed source of cobalt-60 or cesium-137.

459.3887 Teletherapy: Requirement for persons who maintain or repair sealed sources and units. (NRS 459.201) Only a person licensed by the State of Nevada, the Nuclear Regulatory Commission, or an agreement state to perform maintenance and repair of a teletherapy unit may:

1. Install, relocate, or remove a teletherapy sealed source or a teletherapy unit that contains a sealed source; or

2. Maintain, adjust, or repair a source drawer, the shutter, or other mechanism of a teletherapy unit that could expose the source, reduce the shielding around the source, or result in increased radiation levels.

459.3891 Teletherapy: Changes which require amendment to license. (NRS 459.201) A licensee must apply for and receive an amendment to his license before:

1. Making any change in the shielding of a treatment room;

2. Making any change in the location of the teletherapy unit within the treatment room;

3. Using the teletherapy unit in a manner that could result in increased radiation levels in areas outside of the treatment room;

4. Relocating the teletherapy unit; or

5. Allowing a person not listed on the license of the licensee to perform the duties of the teletherapy physicist.

459.3895 Teletherapy: Posting of instructions at unit; instruction for operators of unit; records regarding instruction. (NRS 459.201)

1. A licensee shall post instructions at the teletherapy unit console which inform the operator of:

(a) The procedure to be followed to ensure that only the patient or human research subject is in the treatment room before turning the primary beam of radiation on to begin a treatment or after a door interlock interruption;

(b) The procedure to be followed if the operator is unable to turn the primary beam of radiation off with controls outside the treatment room or if any other abnormal operation occurs; and

(c) The names and telephone numbers of the authorized users and the radiation safety officer to be contacted immediately if the teletherapy unit or console operates abnormally.

2. A licensee shall provide instruction concerning the information specified in subsection 1 to all persons who operate a teletherapy unit.

3. A licensee shall retain for at least 3 years a record of all persons receiving instruction pursuant to subsection 2, which must include:

(a) A description of the instruction;

(b) The date of instruction; and

(c) The name of the person who gave the instruction.

459.3901 Teletherapy: General requirements for room and protection of persons entering room; records. (NRS 459.201)

1. A licensee shall control access to the room for teletherapy by a door at each entrance.

2. A licensee shall equip each entrance to the room for teletherapy with an electrical interlock system that will:

(a) Prevent the operator from turning the primary beam of radiation on unless the entrance door for each treatment room is closed;

(b) Turn the primary beam of radiation off immediately when an entrance door is opened; and

(c) Prevent the primary beam of radiation from being turned on following an interlock interruption until all entrance doors to the treatment room are closed and the beam on-off control is reset at the console.

3. A licensee shall equip each entrance to the room for teletherapy with a light that indicates the condition of the beam.

4. A licensee shall install in each room for teletherapy a permanent radiation monitor which must:

(a) Be capable of continuously monitoring the status of the beam of radiation.

(b) Provide visible notice of a malfunction of the teletherapy machine that results in an exposed or partially exposed source, and must be observable by a person entering the room for teletherapy.

(c) Be equipped with a back-up power supply separate from the power supply to the teletherapy unit. The back-up power supply may be a battery system.

(d) Be checked with a dedicated check source for proper operation each day before the teletherapy unit is used for the treatment of patients or human research subjects.

5. A licensee shall maintain a record for at least 3 years after the checks required by paragraph (d) of subsection 4. The record must include:

(a) The date of each check;

(b) A notation that the monitor indicates when its detector is and is not exposed; and

(c) The initials of the person who performed each check.

6. If a radiation monitor is inoperable, a licensee shall require each natural person entering the teletherapy room to use a survey instrument or audible alarm personal dosimeter to monitor for any malfunction of the source exposure mechanism that may result in an exposed or partially exposed source. The instrument or dosimeter must be checked with a dedicated check source for proper operation at the beginning of each day of use. The licensee shall keep a record as described in subsection 5.

7. A licensee shall promptly repair or replace the radiation monitor if it is inoperable.

8. A licensee shall construct or equip each room for teletherapy to permit continuous observation of the patient or human research subject from the teletherapy unit console during irradiation.

459.3905 Teletherapy: Requirements for portable radiation detection survey instrument. (NRS 459.201) A licensee authorized to use radioactive material in a teletherapy unit shall have in his possession either a portable radiation detection survey instrument capable of detecting dosage rates between 0.1 millirem per hour and 100 millirems per hour or a portable radiation detection survey instrument capable of measuring dosage rates between 1 millirem per hour and 1,000 millirems per hour.

459.3911 Teletherapy: Calibrated dosimetry system; dosimetry system for spot-check measurements; records. (NRS 459.201)

1. A licensee shall have a calibrated dosimetry system available for use. The system must have been calibrated either:

(a) By the National Institute of Standards and Technology or by a calibration laboratory accredited by the American Association of Physicists in Medicine, which calibration must have

been performed within the previous 2 years and after any servicing that may have affected system calibration; or

(b) Within the previous 4 years, and 18 to 30 months after that calibration the system must have been intercompared at an intercomparison meeting with another dosimetry system that was calibrated within the past 24 months by the National Institute of Standards and Technology or by a calibration laboratory certified by the American Association of Physicists in Medicine.

2. The intercomparison meeting specified in subsection 1 must have been sanctioned by a calibration laboratory or radiologic physics center accredited by the American Association of Physicists in Medicine. The results of the intercomparison meeting must have indicated that the calibration factor of the system of the licensee had not changed by more than 2 percent. A licensee may not use the intercomparison result to change the calibration factor. When intercomparing dosimetry systems to be used for calibrating cobalt-60 teletherapy units, the licensee shall use a teletherapy unit with a cobalt-60 source. When intercomparing dosimetry systems to be used for calibrating cesium-137 teletherapy units, the licensee shall use a teletherapy unit with a cesium-137 source.

3. A licensee shall have available for use a dosimetry system for spot-check measurements. The system may be compared with a system that has been calibrated in accordance with subsections 1 and 2. This comparison must have been performed within the previous year and after each servicing that may have affected system calibration. The spot-check system may be the same system used to satisfy the requirements of subsections 1 and 2.

4. A licensee shall retain a record of each calibration, intercomparison, and comparison for the duration of the license. Each record must include:

(a) The date of each calibration, intercomparison, and comparison;

(b) The model numbers and serial numbers of the instruments that were calibrated, intercompared, or compared;

(c) The correction factor that was determined from an intercomparison;

(d) The names of the persons who performed the calibration, intercomparison, or comparison; and

(e) Evidence that the intercomparison meeting was sanctioned by a calibration laboratory or radiologic physics center accredited by the American Association of Physicists in Medicine.

459.3914 Teletherapy: Full calibration measurements on unit; physical decay corrections; records. (NRS 459.201)

1. A licensee authorized to use a teletherapy unit for medical use shall perform full calibration measurements on each teletherapy unit:

(a) Before the first medical use of the unit;

(b) Before medical use under the following conditions:

(1) Whenever spot-check measurements indicate that the output differs by more than 5 percent from the output obtained at the last full calibration corrected mathematically for radioactive decay;

(2) Following replacement of the source or following reinstallation of the teletherapy unit in a new location;

(3) Following any repair of the teletherapy unit that includes removal of the source or major repair of the components associated with the source exposure assembly; and

(c) At intervals not exceeding 1 year.

2. Full calibration measurements must include a determination of:

(a) The output within plus or minus 3 percent for the range of field sizes and for the distance or range of distances used for medical use;

(b) The coincidence of the radiation field and the field indicated by the light beam localizing devices;

(c) The uniformity of the radiation field and its dependence on the orientation of the useful beam;

(d) Timer accuracy and linearity over the range of use;

(e) On-off error; and

(f) Accuracy of all distance measuring and localization devices in medical use.

3. A licensee shall use the dosimetry system described in subsection 1 of NAC 459.3911 to measure the output for one set of exposure conditions. The remaining radiation measurements required by paragraph (a) of subsection 2 of this section may be made using a dosimetry system that indicates relative dose rates.

4. A licensee shall make full calibration measurements required by subsection 1 of this section in accordance with the procedures recommended by Task Group 21 of the Radiation Therapy Committee of the American Association of Physicists in Medicine that are described in Medical Physics Vol. 10, No. 6, 1983, pp. 741-771, and Vol. 11, No. 2, 1984, p. 213, or in accordance with procedures comparable to those recommended by Task Group 21 which have been approved by the Division.

5. A licensee shall correct mathematically the outputs determined in paragraph (a) of subsection 2 for physical decay for intervals not exceeding 1 month for cobalt-60 or 6 months for cesium-137.

6. Full calibration measurements required by subsection 1 and physical decay corrections required by subsection 5 must be performed by the teletherapy physicist of the licensee.

7. A licensee shall retain a record of each calibration for the duration of use of the teletherapy unit source. Each record must include:

(a) The date of the calibration;

(b) The name of the manufacturer, model number, and serial number for both the teletherapy unit and the source;

(c) The model numbers and serial numbers of the instruments used to calibrate the teletherapy unit;

(d) The tables that describe the output of the unit over the range of field sizes and for the range of distances used in radiation therapy;

(e) A determination of the coincidence of the radiation field and the field indicated by the light beam localizing device;

(f) An assessment of timer linearity and constancy, the calculated on-off error, and the estimated accuracy of each distance measuring or localization device; and

(g) The signature of the teletherapy physicist.

459.3917 Teletherapy: Output spot checks on unit; safety spot checks and repair of facility; records. (NRS 459.201)

1. A licensee authorized to use teletherapy units for medical use shall perform output spot checks on each teletherapy unit once in each calendar month that include a determination of:

(a) Timer constancy and timer linearity over the range of use;

(b) On-off error;

(c) The coincidence of the radiation field and the field indicated by the beam localization device;

(d) The accuracy of all distance measuring and localization devices used for medical use;

(e) The output for one typical set of operating conditions measured with the dosimetry system described in subsection 3 of NAC 459.3911; and

(f) The difference between the measurements made in paragraph (e) of this subsection and the anticipated output, expressed as a percentage of the anticipated output.

2. A licensee shall perform the measurements required by subsection 1 in accordance with procedures established by the teletherapy physicist, but the teletherapy physicist need not actually perform the measurements.

3. A licensee shall have the teletherapy physicist review the results of each spot-check measurement within 15 days. The teletherapy physicist shall promptly notify the licensee in writing of the results of his review of each spot-check measurement. The licensee shall keep a copy of each written notification for at least 3 years.

4. A licensee authorized to use a teletherapy unit for medical use shall perform safety spot checks of each facility for teletherapy at least once in each calendar month that assure proper operation of:

(a) Electrical interlocks at each entrance to a room for teletherapy;

(b) Electrical or mechanical stops installed for the purpose of limiting use of the primary beam of radiation;

(c) Lights that indicate the condition of the beam on the teletherapy unit, on the control console, and in the facility;

(d) Viewing systems;

(e) Doors on treatment rooms from inside and outside the rooms; and

(f) Electrically assisted doors on treatment rooms with the electrical power to the teletherapy unit turned off.

5. A licensee shall arrange for the prompt repair of each item specified in subsection 4 that is not operating properly, and shall not use the teletherapy unit following a door interlock malfunction until the interlock system has been repaired.

6. A licensee shall retain a record of each spot check required by subsections 1 to 4, inclusive, for a least 3 years. Each record must include:

(a) The date of the spot check;

(b) The name of the manufacturer, model number, and serial number of both the teletherapy unit and source;

(c) The name of the manufacturer, model number, and serial number of the instrument used to measure the output of the teletherapy unit;

(d) An assessment of timer constancy and linearity;

(e) The calculated on-off error;

(f) A determination of the coincidence of the radiation field and the field indicated by the light beam localizing device;

(g) The determined accuracy of each distance measuring or localization device;

(h) The difference between the anticipated output and the measured output;

(i) Notations indicating the operability of each entrance door electrical interlock, each electrical or mechanical stop, each light that indicates the condition of the beam, the viewing system, and doors; and

(j) The signature of the person who performed the periodic spot check.

459.392 Teletherapy: General requirements for safety checks of facility; records. (NRS 459.201)

1. A licensee shall promptly check all systems listed in subsection 4 of NAC 459.3917 for proper function after each installation of a teletherapy source and after making a change in the teletherapy installation for which an amendment of his license was required by subsections 1 to 4, inclusive, of NAC 459.3891.

2. If the results of the checks required by subsection 1 indicate the malfunction of any system specified in subsection 4 of NAC 459.3917, the licensee shall lock the control console in the "off" position and not use the unit except as may be necessary to repair, replace, or check the malfunctioning system.

3. A licensee shall retain for at least 3 years a record of the facility checks following installation of a source. Each record must include:

(a) Notations indicating the operability of each entrance interlock, each electrical or mechanical stop, and each light that indicates the condition of the beam, the viewing system and the doors; and

(b) The signature of the radiation safety officer.

459.3924 Teletherapy: Radiation surveys for verification of dose rates and dose quantities per unit of time; records. (NRS 459.030, 459.201)

1. Before medical use, after each installation of a teletherapy source, and after making any change for which an amendment of his license is required, a licensee shall perform radiation surveys with a portable radiation detection survey instrument to verify that:

(a) The maximum and average dose rates at a distance of 1 meter from the teletherapy source with the source in the "off" position and the collimators set for a normal treatment field do not

exceed 10 millirems (0.1 millisievert) per hour and 2 millirems (0.02 millisievert) per hour, respectively; and

(b) With the teletherapy source in the "on" position with the largest clinically available treatment field and with a scattering phantom in the primary beam of radiation, the:

(1) Radiation dose rates in restricted areas are not likely to cause an occupational dose to an adult in excess of the limits specified in NAC 459.325; and

(2) Radiation dose rates in controlled or unrestricted areas are not likely to cause a total effective dose equivalent to any member of the public in excess of the limits specified in NAC 459.335.

2. If the results of the surveys required by subsection 1 indicate any radiation dose quantity per unit of time in excess of the respective limit specified, the licensee shall lock the control in the "off" position and not use the unit:

(a) Except as may be necessary to repair, replace, or test the shielding of the unit or the shielding of the treatment room;

(b) Until the licensee can make effective engineering changes in the unit or treatment room or administrative changes in the size and usage of the restricted area which would bring the radiation dose quantity per unit of time or maximum potential exposure into compliance with the limits specified in subsection 1; or

(c) Until the licensee has received a specific exemption pursuant to NAC 459.120.

3. A licensee shall retain a record of the radiation measurements made following installation of a source for the duration of the license. Each record must include:

(a) The date of the measurements;

(b) The reason the survey is required;

(c) The identity of the manufacturer, model number and serial number of the teletherapy unit, the source, and the instrument used to measure radiation levels;

(d) Each rate of dosage measured around the teletherapy source while in the "off" position and the average of all measurements:

(e) A plan drawing of the areas surrounding the treatment room that were surveyed;

(f) The measured rate of dosage at several points in each area expressed in millirems per hour;

(g) The calculated maximum quantity of radiation over a period of 1 week for each restricted and unrestricted area; and

(h) The signature of the radiation safety officer.

459.3927 Teletherapy: Excessive radiation levels in unrestricted areas. (NRS 459.030, 459.201)

1. If the survey required by NAC 459.3924 indicates that any member of the public may be exposed to levels of radiation greater than those permitted by NAC 459.335, the licensee shall, except as otherwise provided in subsection 2, before beginning a program of treatment:

(a) Ensure compliance with NAC 459.335 by:

(1) Equipping the unit with stops; or

(2) Adding additional radiation shielding;

(b) Perform the survey required by NAC 459.3924 again; and

(c) Include in the reports mailed to the Division pursuant to NAC 459.393 the results of the initial survey, a description of the modifications made to comply with NAC 459.335, and the results of the second survey.

2. As an alternative to the requirements of subsection 1, the licensee may request a license amendment under NAC 459.204 that authorizes radiation levels in unrestricted areas greater than those permitted by NAC 459.335. The licensee may not begin the program of treatment until all of the reports mailed to the Division pursuant to NAC 459.393 have been accepted as satisfactory by the Division, or the requested amendment to the license has been issued.

459.393 Teletherapy: Mailing of copy of report of survey measurements to Division. (NRS 459.201) A licensee shall mail a copy of the reports required by NAC 459.392, 459.3924, and 459.3927 and a report of the output from the teletherapy source expressed as roentgens or rads per hour at a distance of 1 meter from the source and determined during the full calibration required by NAC 459.3914 to the Division within 30 days after the survey measurements have been recorded.

459.3935 Teletherapy: Inspection and servicing of unit; records. (NRS 459.201)

1. A licensee shall have each teletherapy unit fully inspected and serviced during the replacement of the teletherapy source or at intervals not to exceed 5 years, whichever comes first, to assure proper functioning of the source exposure mechanism.

2. The inspection and servicing may only be performed by person, specifically licensed to do so by the State of Nevada, the Nuclear Regulatory Commission, or an agreement state.

3. A licensee shall keep a record of the inspection and servicing for the duration of the license. The record must include:

(a) The name of the inspector;

(b) The license number of the inspector;

(c) The date of the inspection;

(d) The name of the manufacturer and the model number and serial number of both the teletherapy unit and source;

(e) A list of the components inspected, serviced, and replaced; and

(f) The signature of the inspector.

459.394 Qualifications of radiation safety officer. (NRS 459.030, 459.201) Except as otherwise provided in NAC 459.3942, a licensee shall require the person fulfilling the responsibilities of the radiation safety officer as provided in NAC 459.3821:

1. To be an authorized user on the license of the licensee;

2. To be certified by one of the following organizations:

(a) The American Board of Health Physics, in comprehensive health physics;

(b) The American Board of Radiology;

(c) The American Board of Nuclear Medicine;

(d) The American Board of Science, in nuclear medicine;

(e) The Board of Pharmaceutical Specialties, in nuclear pharmacy;

(f) The American Board of Medical Physics, in radiation oncology physics;

(g) The American Osteopathic Board of Radiology;

(h) The American Osteopathic Board of Nuclear Medicine; or

(i) The Royal College of Physicians and Surgeons of Canada, in nuclear medicine; or

3. To have classroom and laboratory training and experience as follows:

(a) At least 200 hours of classroom and laboratory training that included:

(1) Radiation physics and instrumentation;

(2) Radiation protection;

(3) Mathematics pertaining to the use and measurement of radioactivity;

(4) Radiation biology; and

(5) Radiopharmaceutical chemistry; and

(b) At least 1 year of full-time experience as a radiation safety technologist at a medical institution under the supervision of the person identified as the radiation safety officer on a license issued by this State, the Nuclear Regulatory Commission or an agreement state that authorizes the medical use of radioactive material.

459.3942 Exemption from training requirements for radiation safety officer. (NRS 459.201) A person identified as a radiation safety officer by the State of Nevada, the Nuclear Regulatory Commission, or an agreement state on a license issued before October 1, 1986, need not comply with the training requirements of NAC 459.394.

459.3944 Qualifications of authorized user of radiopharmaceutical in uptake, dilution or excretion studies. (NRS 459.201) Except as otherwise provided in NAC 459.3962 and 459.3964, a licensee shall require the authorized user of a radiopharmaceutical in uptake, dilution or excretion studies to be a physician who:

1. Is certified in one of the following specialties:

(a) Nuclear medicine by the American Board of Nuclear Medicine;

(b) Diagnostic radiology by the American Board of Radiology;

(c) Diagnostic radiology or radiology by the American Osteopathic Board of Radiology;

(d) Nuclear medicine by the American Osteopathic Board of Nuclear Medicine; or

(e) Nuclear medicine by the Royal College of Physicians and Surgeons of Canada;

2. Has received classroom and laboratory training in basic radioisotope techniques applicable to the use of prepared radiopharmaceuticals, and has the following supervised clinical experience:

(a) At least 40 hours of classroom and laboratory training that included:

(1) Radiation physics and instrumentation;

(2) Radiation protection;

(3) Mathematics pertaining to the use and measurement of radioactivity;

(4) Radiation biology; and

(5) Radiopharmaceutical chemistry; and

(b) At least 20 hours of supervised clinical experience under the supervision of an authorized user which included:

(1) Examining patients or human research subjects and reviewing their case histories to determine their suitability for radioisotope diagnosis, limitations or contraindication;

(2) Selecting the suitable radiopharmaceuticals and calculating and measuring the dosages;

(3) Administering dosages to patients or human research subjects and using radiation shields for syringes;

(4) Collaborating with the authorized user in the interpretation of radioisotope test results; and

(5) Patient or human research subject follow-up;

3. Has successfully completed a 6-month training program in nuclear medicine as part of a training program that has been approved by the Accreditation Council for Graduate Medical Education and which included classroom and laboratory training, work experience, and supervised clinical experience in all the topics identified in subsection 2; or

4. Is identified as an authorized user of a radiopharmaceutical in uptake, dilution or excretion studies on a:

(a) License issued by the Nuclear Regulatory Commission or an agreement state that authorizes the medical use of radioactive material; or

(b) Permit issued by a licensee who holds a specific license of broad scope which authorizes the medical use of radioactive material.

459.3946 Qualifications of authorized user of radiopharmaceutical, generator or reagent kit in imaging or localization studies. (NRS 459.201) Except as otherwise provided in NAC 459.3962 and 459.3964, a licensee shall require the authorized user of a radiopharmaceutical, generator or reagent kit in imaging or localization studies to be a physician who:

1. Is certified in one of the following specialties:

(a) Nuclear medicine by the American Board of Nuclear Medicine;

(b) Diagnostic radiology by the American Board of Radiology;

(c) Diagnostic radiology or radiology by the American Osteopathic Board of Radiology;

(d) Nuclear medicine by the American Osteopathic Board of Nuclear Medicine; or

(e) Nuclear medicine by the Royal College of Physicians and Surgeons of Canada;

2. Has received classroom and laboratory training in basic techniques for handling radioisotopes applicable to the use of prepared radiopharmaceuticals, generators and reagent kits, and has the following supervised work experience and supervised clinical experience:

(a) At least 200 hours of classroom and laboratory training that included:

(1) Radiation physics and instrumentation;

(2) Radiation protection;

(3) Mathematics pertaining to the use and measurement of radioactivity;

(4) Radiopharmaceutical chemistry; and

(5) Radiation biology;

(b) At least 500 hours of supervised work experience under the supervision of an authorized user that included:

(1) Ordering, receiving and safely unpacking radioactive materials and performing related radiation surveys;

(2) Calibrating dose calibrators and diagnostic instruments and performing checks for proper operation of survey meters;

(3) Calculating and safely preparing dosages for patients or human research subjects;

(4) Using administrative controls to prevent the misadministration of radioactive material;

(5) Using procedures to contain safely radioactive material which has spilled and using proper procedures for decontamination; and

(6) Eluting technetium-99m from generator systems, measuring and testing the eluate for molybdenum-99 and alumina contamination, and processing the eluate with reagent kits to prepare technetium-99m labeled radiopharmaceuticals; and

(c) At least 500 hours of supervised clinical experience under the supervision of an authorized user that included:

(1) Examining patients or human research subjects and reviewing their case histories to determine their suitability for radioisotope diagnosis, limitations or contraindications;

(2) Selecting the suitable radiopharmaceuticals and calculating and measuring the dosages;

(3) Administering dosages to patients or human research subjects and using radiation shields for syringes;

(4) Collaborating with the authorized user in the interpretation of results of the radioisotope test; and

(5) Patient or human research subject follow-up;

3. Has successfully completed a 6-month program for training in nuclear medicine that has been approved by the Accreditation Council for Graduate Medical Education and which included classroom and laboratory training, work experience and supervised clinical experience in all the topics identified in subsection 2; or

4. Is identified as an authorized user of a radiopharmaceutical, generator or reagent kit in imaging or localization studies on a:

(a) License issued by the Nuclear Regulatory Commission or an agreement state that authorizes the medical use of radioactive material; or

(b) Permit issued by a licensee who holds a specific license of broad scope which authorizes the medical use of radioactive material.

459.3948 Qualifications of authorized user of radiopharmaceuticals in therapeutic use of unsealed radioactive material. (NRS 459.201) Except as otherwise provided in NAC 459.3962, a licensee shall require an authorized user of radiopharmaceuticals in therapeutic procedures to be a physician who:

1. Is certified by one of the following organizations:

(a) The American Board of Nuclear Medicine;

(b) The American Board of Radiology, in radiology, therapeutic radiology or radiation oncology;

(c) The American Osteopathic Board of Radiology, after 1984; or

(d) The Royal College of Physicians and Surgeons of Canada, in nuclear medicine;

2. Has received classroom and laboratory training in basic radioisotope techniques applicable to the use of therapeutic radiopharmaceuticals, and has the following supervised clinical experience:

(a) At least 80 hours of classroom and laboratory training that included:

(1) Radiation physics and instrumentation;

(2) Radiation protection;

(3) Mathematics pertaining to the use and measurement of radioactivity; and

(4) Radiation biology; and

(b) Supervised clinical experience under the supervision of an authorized user at a medical institution which included:

(1) The use of iodine-123 or iodine-131 for diagnosis of thyroid function and the use of iodine-131 for treatment of hyperthyroidism or cardiac dysfunction in at least 10 persons; and

(2) The use of iodine-131 for treatment of thyroid carcinoma in at least 3 persons; or

3. Is identified as an authorized user of radiopharmaceuticals in therapeutic procedures on a:

(a) License issued by the Nuclear Regulatory Commission or an agreement state that authorizes the medical use of radioactive material; or

(b) Permit issued by a licensee that holds a specific license of broad scope which authorizes the medical use of radioactive material.

459.395 Qualifications of authorized user of only iodine-131 for treatment of hyperthyroidism. (NRS 459.201) Except as otherwise provided in NAC 459.3962, a licensee shall require an authorized user of only iodine-131 for the treatment of hyperthyroidism to be a physician who has experience in treating thyroid disease, who has received classroom and

laboratory training in basic techniques for the handling of radioisotopes applicable to the use of iodine-131 for treating hyperthyroidism, and who:

1. Has the following supervised clinical experience:

(a) At least 80 hours of classroom and laboratory training that included:

(1) Radiation physics and instrumentation;

(2) Radiation protection;

(3) Mathematics pertaining to the use and measurement of radioactivity; and

(4) Radiation biology; and

(b) Supervised clinical experience under the supervision of an authorized user which included the use of iodine-123 or iodine-131 for the diagnosis of thyroid function, and the use of iodine-131 for the treatment of hyperthyroidism in at least 10 persons; or

2. Is identified as an authorized user of only iodine-131 for the treatment of hyperthyroidism on a:

(a) License issued by the Nuclear Regulatory Commission or an agreement state that authorizes the medical use of radioactive material; or

(b) Permit issued by a licensee who holds a specific license of broad scope which authorizes the medical use of radioactive material.

459.3952 Qualifications of authorized user of only iodine-131 for treatment of thyroid carcinoma. (NRS 459.201) Except as otherwise provided in NAC 459.3962, a licensee shall require an authorized user of only iodine-131 for the treatment of thyroid carcinoma to be a physician who:

1. Has experience in treating thyroid disease, who has received classroom and laboratory training in basic techniques for the handling of radioisotopes applicable to the use of iodine-131 for treating thyroid carcinoma, and who has the following supervised clinical experience:

(a) At least 80 hours of classroom and laboratory training that included:

(1) Radiation physics and instrumentation;

(2) Radiation protection;

(3) Mathematics pertaining to the use and measurement of radioactivity; and

(4) Radiation biology; and

(b) Supervised clinical experience under the supervision of an authorized user which included the use of iodine-131 for the treatment of thyroid carcinoma in at least three persons; or

2. Is identified as an authorized user of only iodine-131 for the treatment of thyroid carcinoma on a:

(a) License issued by the Nuclear Regulatory Commission or an agreement state that authorizes the medical use of radioactive material; or

(b) Permit issued by a licensee who holds a specific license of broad scope which authorizes the medical use of radioactive material.

459.3954 Qualifications of authorized user of brachytherapy source in therapy procedures. (NRS 459.201) Except as otherwise provided in NAC 459.3962, a licensee shall require an authorized user of a brachytherapy source in therapy procedures to be a physician who:

1. Is certified in one of the following specialties:

(a) Radiology, therapeutic radiology or radiation oncology by the American Board of Radiology;

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

(c) Radiology, with specialization in radiotherapy, as a British "Fellow of the Faculty of Radiology" or "Fellow of the Royal College of Radiology"; or

(d) Therapeutic radiology by the Canadian Royal College of Physicians and Surgeons;

2. Is in an active practice of therapeutic radiology, who has received classroom and laboratory training in basic techniques for the handling of radioisotopes applicable to the therapeutic use of brachytherapy sources and who has the following supervised work experience and supervised clinical experience:

(a) At least 200 hours of classroom and laboratory training which included:

(1) Radiation physics and instrumentation;

(2) Radiation protection;

(3) Mathematics pertaining to the use and measurement of radioactivity; and

(4) Radiation biology;

(b) At least 500 hours of supervised work experience under the supervision of an authorized user at a medical institution which included:

(1) Ordering, receiving and safely unpacking radioactive material and performing related radiation surveys;

(2) Checking survey meters for proper operation;

(3) Preparing, implanting and removing sealed sources;

(4) Maintaining accurate inventories of brachytherapy sources;

(5) Using administrative controls to prevent the misadministration of radioactive material; and

(6) Using procedures for emergencies to control radioactive material; and

(c) At least 3 years of supervised clinical experience that included at least 1 year in a formal training program approved by the Residency Review Committee for Radiology of the Accreditation Council for Graduate Medical Education or the Committee on Postdoctoral Training of the American Osteopathic Association, and at least an additional 2 years of clinical experience in therapeutic radiology under the supervision of an authorized user at a medical institution that included:

(1) Examining persons and reviewing their case histories to determine their suitability for brachytherapy treatment and any limitations or contraindications;

(2) Selecting the proper brachytherapy sources and dose and method of administration;

(3) Calculating the dose; and

(4) Postadministration follow-up and review of case histories in collaboration with the authorized user; or

3. Is identified as an authorized user of a brachytherapy source in therapy procedures on a:

(a) License issued by the Nuclear Regulatory Commission or an agreement state that authorizes the medical use of radioactive material; or

(b) Permit issued by a licensee who holds a specific license of broad scope which authorizes the medical use of radioactive material.

459.3956 Qualifications of authorized user of only strontium-90 for ophthalmic radiotherapy. (NRS 459.201) Except as otherwise provided in NAC 459.3962, a licensee shall require an authorized user of only strontium-90 for ophthalmic radiotherapy to be a physician who:

1. Is in the active practice of therapeutic radiology or ophthalmology, and who has received the following classroom and laboratory training in basic techniques for the handling of radioisotopes applicable to the use of strontium-90 for ophthalmic radiotherapy:

(a) At least 24 hours of classroom and laboratory training that included:

(1) Radiation physics and instrumentation;

(2) Radiation protection;

(3) Mathematics pertaining to the use and measuring of radioactivity; and

(4) Radiation biology; and

(b) Supervised clinical training in ophthalmic radiotherapy under the supervision of an authorized user at a medical institution that included the use of strontium-90 for the ophthalmic treatment of at least five persons which included:

(1) Examination of each person to be treated;

(2) Calculation of the dose to be administered;

(3) Administration of the dose; and

(4) Follow-up and review of the case history of each patient; or

2. Is identified as an authorized user of only strontium-90 for ophthalmic therapy on a:

(a) License issued by the Nuclear Regulatory Commission or an agreement state that authorizes the medical use of radioactive material; or

(b) Permit issued by a licensee who holds a specific license of broad scope which authorizes the medical use of radioactive material.

459.3958 Qualifications of authorized user of sealed source in teletherapy unit. (NRS 459.201) Except as otherwise provided in NAC 459.3962, a licensee shall require an authorized user of a sealed source in a teletherapy unit to be a physician who:

1. Is certified in one of the following specialties:

(a) Radiology, therapeutic radiology or radiation oncology by the American Board of Radiology;

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

(c) Radiology with specialization in radiotherapy, as a British "Fellow of the Faculty of Radiology" or "Fellow of the Royal College of Radiology"; or

(d) Therapeutic radiology by the Canadian Royal College of Physicians and Surgeons;

2. Is in the active practice of therapeutic radiology, who has received classroom and laboratory training in basic techniques for the handling of radioisotopes applicable to the use of a sealed source in a teletherapy unit and who has the following supervised work experience and supervised clinical experience:

(a) At least 200 hours of classroom and laboratory training that included:

(1) Radiation physics and instrumentation;

(2) Radiation protection;

(3) Mathematics pertaining to the use and measurement of radioactivity; and

(4) Radiation biology;

(b) At least 500 hours of supervised work experience under the supervision of an authorized user at a medical institution which included:

(1) Reviewing the full calibration measurements and periodic spot-checks;

(2) Preparing treatment plans and calculating treatment times;

(3) Using administrative controls to prevent misadministrations;

(4) Implementing procedures for emergencies to be followed in the event of the abnormal operation of a teletherapy unit or console; and

(5) Checking and using survey meters; and

(c) At least 3 years of supervised clinical experience that included at least 1 year in a formal training program approved by the Residency Review Committee for Radiology of the Accreditation Council for Graduate Medical Education or the Committee on Postdoctoral Training of the American Osteopathic Association and at least an additional 2 years of clinical experience in therapeutic radiology under the supervision of an authorized user at a medical institution which included:

(1) Examining persons and reviewing their case histories to determine their suitability for teletherapy treatment and any limitations or contraindications;

(2) Selecting the proper dose and how it is to be administered;

(3) Calculating the teletherapy doses and collaborating with the authorized user in the review of the progress of patients or human research subjects and consideration of the need to modify originally prescribed doses as warranted by the reaction of patients or human research subjects to radiation; and

(4) Postadministration follow-up and review of case histories; or

3. Is identified as an authorized user of a sealed source in a teletherapy unit on a:

(a) License issued by the Nuclear Regulatory Commission or an agreement state that authorizes the medical use of radioactive material; or

(b) Permit issued by a licensee who holds a specific license of broad scope which authorizes the medical use of radioactive material.

459.3959 Qualifications of authorized user of sealed source for diagnosis. (NRS 459.201) Except as otherwise provided in NAC 459.3962, a licensee shall require an

authorized user of a sealed source in a device described in subsection 1 of NAC 459.2565 to be a physician who:

1. Is certified in:

(a) Radiology, diagnostic radiology, therapeutic radiology or radiation oncology by the American Board of Radiology;

(b) Nuclear medicine by the:

(1) American Board of Nuclear Medicine; or

(2) Royal College of Physicians and Surgeons of Canada; or

(c) Radiology or diagnostic radiology by the American Osteopathic Board of Radiology;

2. Has completed 8 hours of classroom and laboratory training in basic techniques of handling radioisotopes specifically applicable to the device that includes, without limitation:

(a) Radiation physics, mathematics pertaining to the use and measurement of radioactivity and instrumentation;

(b) Radiation biology;

(c) Radiation protection; and

(d) Training in the operation of the device for the uses to which the authorized user will put the device; or

3. Is identified as an authorized user of a sealed source in a device described in subsection 1 of NAC 459.2565 on a:

(a) License issued by the Nuclear Regulatory Commission or an agreement state that authorizes the medical use of radioactive material; or

(b) Permit issued by a licensee who holds a specific license of broad scope which authorizes the medical use of radioactive material.

459.396 Qualifications of teletherapy physicist. (NRS 459.201) A licensee shall require the teletherapy physicist to be a person who:

1. Is certified by the American Board of Radiology in:

(a) Therapeutic radiology physics;

(b) Roentgen ray and gamma ray physics;

(c) X-ray and radium physics; or

(d) Radiological physics;

2. Is certified by the American Board of Medical Physics, in radiation oncology physics; or

3. Holds a master's or doctorate degree in physics, biophysics, radiological physics or health physics, and has completed at least 1 year of full-time training in therapeutic radiological physics and at least an additional 1 year of full-time work experience under the supervision of a teletherapy physicist at a medical institution that included the tasks set forth in NAC 459.3864, 459.3914, 459.3917 and 459.3924.

459.3961 Qualifications of authorized nuclear pharmacist. (NRS 459.201)

1. A licensee shall require an authorized nuclear pharmacist who is employed by the licensee to be a pharmacist who:

(a) Is certified as a nuclear pharmacist by the Board of Pharmaceutical Specialties;

(b) Has completed 700 hours in a structured educational program consisting of:

(1) Didactic training in:

(I) Radiation physics and instrumentation;

(II) Radiation protection;

(III) Radiation biology;

(IV) Chemistry of radioactive material for medical use; and

(V) Mathematics pertaining to the use and measurement of radioactivity; and

(2) Supervised experience in nuclear pharmacy, including, without limitation:

(I) Shipping and receiving of radioactive material for medical use and performing related radiation surveys;

(II) Using and performing checks for proper operation of dose calibrators, survey meters and, if appropriate, instruments used to measure alpha- or beta-emitting radionuclides;

(III) Calculating, assaying and preparing dosages for patients or human research subjects safely;

(IV) Using administrative controls to avoid mistakes in the administration of radioactive material;

(V) Using procedures to prevent or minimize contamination; and

(VI) Using procedures for decontamination; or

(c) Is identified as an authorized nuclear pharmacist on a:

(1) License that authorizes the use of radioactive material in the practice of nuclear pharmacy and is issued by the Nuclear Regulatory Commission or an agreement state; or

(2) Permit issued by a licensee who holds a specific license of broad scope which authorizes the use of radioactive material in the practice of nuclear pharmacy.

2. Except as otherwise provided in subsection 3, the licensee shall also require the authorized nuclear pharmacist described in paragraph (b) of subsection 1 to obtain a certification written and signed by an authorized nuclear pharmacist who is an instructor that the training required in paragraph (b) of subsection 1 was completed and the authorized nuclear pharmacist is competent to operate a nuclear pharmacy independently.

3. A licensee may apply to the Division for an amendment to a license that identifies an experienced nuclear pharmacist as an authorized nuclear pharmacist. If the amendment is issued, the licensee is not required to comply with subsection 2. The Division will not grant such an amendment unless the experienced nuclear pharmacist:

(a) Is currently working in a nuclear pharmacy; and

(b) Has completed the educational program as set forth in paragraph (b) of subsection 1 before August 31, 1998.

459.3962 Exemption from training requirements for certain authorized users. (NRS 459.201) A physician identified as an authorized user of radioactive material on a license issued before April 1, 1987, by the State of Nevada, the Nuclear Regulatory Commission, or an agreement state who performs only those methods of use for which he was authorized on that date need not comply with the training requirements of NAC 459.3944 to 459.3958, inclusive.

459.3964 Exemption from requirements of NAC 459.3944 and 459.3946 for certain physicians. (NRS 459.201) A physician who, before July 1, 1984, began a 3-month training program in nuclear medicine approved by the Accreditation Council for Graduate Medical Education and successfully completed the program need not comply with the requirements of NAC 459.3944 or 459.3946.

459.3966 Time requirement for training and experience of applicant to become authorized user. (NRS 459.201) The training and experience specified in NAC 459.394 to 459.3961, inclusive, must have been obtained within the 7 years immediately preceding the date of application of the person to become an authorized user on a license, or the person must have had related continuous education and experience since the required training and experience was completed.