PROPOSED REGULATION OF THE STATE BOARD OF HEALTH

LCB File No. R114-12

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

These regulations are being proposed in accordance with NRS 459.201.

NAC 459 is hereby amended by adding thereto the provisions set forth as sections 1 to 51, inclusive, of this regulation.

Section 1. NAC 459.019 is hereby amended to read as follows:
NAC 459.019 "Appendix A" defined. (NRS 459.201) "Appendix A" means Appendix A to 10 C.F.R. §§ 20.1001 to 20.2402, inclusive ~~[, as those provisions existed on October 13, 1999]~~.

Sec. 2. NAC 459.0192 is hereby amended to read as follows:
NAC 459.0192 "Appendix B" defined. (NRS 459.201) "Appendix B" means Appendix B to 10 C.F.R. §§ 20.1001 to 20.2402, inclusive, ~~[as those provisions existed on November 30, 2007, with the following revisions to the List of Elements:~~
~~1. "Femium (Fm) with Atomic Number 100" shall be deemed to mean "Fermium (Fm) with Atomic Number 100";~~
~~2. "Hafniim (Hf) with Atomic Number 72" shall be deemed to mean "Hafnium (Hf) with Atomic Number 72"; and~~
~~3. "Tantaium (Ta) with Atomic Number 73" shall be deemed to mean "Tantalum (Ta) with Atomic Number 73."]~~

Sec. 3. NAC 459.0194 is hereby amended to read as follows:
NAC 459.0194 "Appendix C" defined. (NRS 459.201) "Appendix C" means Appendix C to 10 C.F.R. §§ 20.1001 to 20.2402, inclusive ~~[, as those provisions existed on October 13, 1999.]~~

Sec. 4. NAC 459.0195 is hereby amended to read as follows:
NAC 459.0195 "Appendix E" defined. (NRS 459.201) "Appendix E" means Appendix E to 10 C.F.R. §§ 20.1001 to 20.2402, inclusive ~~[, as those provisions existed on November 8, 2006].~~

Sec. 5. NAC 459.0196 is hereby amended to read as follows:
NAC 459.0196 "Appendix G" defined. (NRS 459.201) "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. 6. NAC 459.074 is hereby amended to read as follows:

NAC 459.074 "Radiation safety officer" defined. (NRS 459.201) "Radiation safety officer**,** ~~[has the meaning ascribed to it in 10 C.F.R. § 35.2, as adopted by reference pursuant to NAC 459.3062.]~~ ***(RSO), for a licensee or registrant is a person who has the education, knowledge, authority, responsibility and training to apply appropriate radiation protection regulations and has been delegated such authority and assigned such responsibility by the licensee or registrant and is the primary contact with the Health Division.***

Sec. 7 . NAC 459.072 is hereby amended to read as follows:

NAC 459.072 "Radiation *producing* machine" defined. (NRS 459.201) "Radiation ***producing*** machine" means any device capable of producing radiation except one which produces radiation only from radioactive material.

Sec. 8. NAC 459.120 is hereby amended to read as follows:

NAC 459.120 Exemptions. (NRS 459.201)

1. The Division may, upon application or its own initiative, grant exemptions or exceptions from the requirements of NAC 459.010 to 459.950, inclusive, as it determines will not result in undue hazard to public health and safety or property.

2. Common and contract carriers, freight forwarders and warehousemen who are subject to the regulations of the United States Department of Transportation or the United States Postal Service, 39 C.F.R. ~~[Parts 14 and 15]~~, are exempt from NAC 459.010 to 459.950, inclusive, to the extent that they transport or store sources of radiation in the regular course of their carriage for another or store the sources as an incident to such transportation. Private carriers who are subject to the regulations of the United States Department of Transportation are exempt from NAC 459.010 to 459.950, inclusive, to the extent that they transport sources of radiation. Common, contract and private carriers who are not subject to the regulations of the United States Department of Transportation or the United States Postal Service are subject to applicable sections of NAC 459.010 to 459.950, inclusive.

3. Any contractor or subcontractor of the United States Department of Energy or the Nuclear Regulatory Commission who is in one of the following categories and operating within this State is exempt from NAC 459.010 to 459.950, inclusive, to the extent that, under his or her contract, he or she receives, possesses, uses, transfers or acquires sources of radiation:

(a) Any prime contractor performing work for the United States Department of Energy at sites owned or controlled by the United States Government, transporting sources of radiation to or from such sites, or performing contract services during temporary interruptions of such transportation.

(b) Any prime contractor of the United States Department of Energy performing research in, or development, manufacture, storage, testing or transportation of atomic weapons or components thereof.

(c) Any prime contractor of the United States Department of Energy using or operating a nuclear reactor or other nuclear device in a vehicle or vessel owned by the United States Government.

(d) Any other prime contractor or subcontractor of the United States Department of Energy or of the Nuclear Regulatory Commission when the State and the Nuclear Regulatory Commission jointly determine that:

(1) The exemption of the prime contractor or subcontractor is authorized by law; and

(2) Under the terms of the contract or subcontract there is adequate assurance that the work thereunder can be accomplished without undue risk to public health or safety.

Sec. 9. NAC 459.161 is hereby amended to read as follows:

NAC 459.161 Fees; failure to submit fee. (NRS 439.150, 459.201)

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

(a) Medical use, other than mammography, $500 ~~[.]~~ ***per tube***

(b) Veterinary use, $150 ~~[.]~~***per tube***

(c) Dental use, $140~~[.]~~***per tube***

(d) Industrial use, $200~~[.]~~***per tube***

(e)Academic use, $150~~[.]~~***per tube***

(f) Accelerator, $550~~[.]~~***per tube***

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 shall:

(a) Stop operating the radiation ***producing*** 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 $56 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 ***producing*** machine must be accompanied by a ~~[~~nonrefundable~~]~~ fee for each machine as required pursuant to NAC 457.295.

Sec. 10. NAC 459.180 is hereby amended to read as follows:

NAC 459.180 Applicable provisions; exceptions. (NRS 459.030, 459.201)

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

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

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

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

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

(c) ~~[(e)]~~ Persons exempt as provided in this section.

(d) ~~[(f)]~~ Persons exempt pursuant to 10 C.F.R. § 150.

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

Sec. 11. NAC 459.184 is hereby amended to read as follows:

NAC 459.184 Exemption for certain concentrations and quantities of radioactive material other than source material. (NRS 459.030, 459.201)

1. Except as otherwise provided in subsection 3, any person is exempt from NAC 459.180 to 459.313, inclusive, to the extent that he or she receives, possesses, uses, transfers, owns or acquires products or materials containing:

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

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

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

3. A person shall not introduce radioactive material into a product or material knowing or having reason to believe that it will be transferred to persons exempt under subsection 1 or the

equivalent regulations of the Nuclear Regulatory Commission or any agreement state, except in accordance with a specific license issued ***by the Nuclear Regulatory Commission*** pursuant to ***10 CFR 32.11,*** ~~[NAC 459.276]~~ or the general licenses provided in NAC 459.210.

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

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

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

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

5. Except as otherwise provided in subsections 6 and 7, any person is exempt from the provisions of NAC 459.010 to459.950, inclusive, to the extent that he or she receives, possesses, uses, transfers, owns or acquires radioactive material in individual quantities each of which does not exceed the applicable quantity set forth in NAC 459.188.

6. The provisions of NAC 459.180 to 459.313, inclusive, do not authorize the production, packaging or repackaging of radioactive material for purposes of commercial distribution or the incorporation of radioactive material into products intended for commercial distribution.

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

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

Sec.12. NAC 459.1955 is hereby amended to read as follows:

NAC 459.1955 Preparation for decommissioning: Plan for financing; financial assurance; records. (NRS 459.030, 459.201)

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

(a) Unsealed radioactive materials with a half-life of more than 120 days in quantities that exceed 105 times the applicable quantities set forth in NAC 459.362; or

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

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

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

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

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

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

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

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

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

4. If an applicant:

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

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

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

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

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

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

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

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

(b) Submit a plan for financing decommissioning.

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

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

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

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

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

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

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

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

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

(2) R, for a combination of radionuclides, divided by 104 is greater than 1 but R divided by 105 is less than or equal to 1.

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

(1) The amount of radioactive material is greater than 103, but less than or equal to 104 times the applicable quantities described in NAC 459.362, in unsealed form; or

(2) R, for a combination of radionuclides, divided by 103 is greater than 1 but R divided by 104 is less than or equal to 1.

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

(1) The amount of radioactive material is greater than 1010 times the applicable quantities described in NAC 459.362, in sealed sources or plated foils; or

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

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

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

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

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

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

10. (1) Each decommissioning funding plan must be submitted for review and approval and must contain –

(i) A detailed cost estimate for decommissioning, in an amount reflecting:

(a) The cost of an independent vendor, with radiological decommissioning capability, expertise and licensing, to perform all decommissioning activities;

(b) The cost of meeting the criteria in NAC 459.3178 for unrestricted use, provided that, if the applicant or licensee can demonstrate its ability to meet the provisions of NAC 459.318, the cost estimate may be based on meeting the NAC 459.318 criteria;

(c) The volume of onsite subsurface material containing residual radioactivity that will require remediation to meet the criteria for license termination; and

(d) An adequate contingency factor.

(ii) Identification of and justification for using the key assumptions contained in the decommissioning cost estimate (DCE);

(iii) A description of the method of assuring funds for decommissioning from subsection 11, including means for adjusting cost estimates and associated funding levels periodically over the life of the facility;

(iv) A certification by the licensee that financial assurance for decommissioning has been provided in the amount of the cost estimate for decommissioning; and

(v) A signed original of the financial instrument obtained to satisfy the requirements of subsection 11 (unless a previously submitted and accepted financial instrument continues to cover the cost estimate for decommissioning).
(2) At the time of license renewal and at intervals not to exceed 3 years, the decommissioning funding plan must be resubmitted with adjustments as necessary to account for changes in costs and the extent of contamination. If the amount of financial assurance will be adjusted downward, this cannot be done until the updated decommissioning funding plan is approved. The decommissioning funding plan must update the information submitted with the original or prior approved plan, and must specifically consider the effect of the following events on decommissioning costs:
(i) Spills of radioactive material producing additional residual radioactivity in onsite subsurface material;
(ii) Waste inventory increasing above the amount previously estimated;
(iii) Waste disposal costs increasing above the amount previously estimated;
(iv)Facility modifications;
(v) Changes in authorized possession limits;
(vi) Actual remediation costs that exceed the previous cost estimate;
(vii) Onsite disposal; and
(viii) Use of a settling pond.

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

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

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

(1) The surety must be open-ended or, if written for a specified term, must be renewed automatically unless 90 days or more before the renewal date the issuer notifies the Division, the beneficiary and the licensee of his or her 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 or her license.

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

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

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

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

(b) Drawings and other documents relating to:

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

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

(c) A list of all the areas:

(1) Designated and formerly designated as restricted areas;

(2) Outside of restricted areas that require documentation pursuant to paragraph (a);

(3) Outside of restricted areas where waste has been buried; and

(4) Outside of restricted areas which contain material that, if the license expired, the licensee would be required to decontaminate the area to unrestricted release levels or apply for approval for disposal pursuant to NAC 459.3595.

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

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

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

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

(4) All areas outside of restricted areas that contain material such that, if the license expired, the licensee would be required to either decontaminate the area to meet the criteria for decommissioning set forth in 10 C.F.R. Part 20, Subpart E, or apply for approval for disposal under 10 C.F.R. § 20.2002.

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

13. Before licensed activities are transferred or assigned pursuant to subsection 2 of NAC 459.198, the licensee must transfer all the records described in paragraphs (a), (b), (c) and (d) of subsection 12 to the licensee to whom the activities have been transferred or assigned. Such

records become, upon receipt, the responsibility of the licensee to whom the activities have been transferred or assigned and must be retained by that licensee until its license is terminated.

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

(a) A parent company must have:

(1) Two of the following three ratios:

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

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

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

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

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

(b) A parent company must have:

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

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

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

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

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

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

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

(d) If a trust is established for the costs of decommissioning, the trustee and trust must be acceptable to the Division. An acceptable trustee includes an appropriate state or federal agency or an entity that has the authority to act as a trustee and whose trust operations are regulated and examined by a federal or state agency.

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

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

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

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

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

17. A licensee shall ensure that a certified public accountant who is independent of the licensee compares the data used to satisfy the financial test as set forth in subsections 14 and 16. The data must be derived from audited, year-end financial statements for the last fiscal year. A licensee shall inform the Division within 90 days after matters which cause the certified public accountant to believe that the data used to satisfy the financial test should be adjusted and that the licensee or parent company, as applicable, can no longer pass the test. After the initial financial test, the licensee or parent company, as applicable, shall repeat the test within 90 days after the close of each fiscal year. If the parent company can no longer pass the test, the licensee shall notify the Division of its intent to establish alternate financial assurance as specified in this section. The notice must be sent by certified mail within 90 days after the close of the fiscal year. The licensee shall provide alternate financial assurance within 120 days after the close of such fiscal year.

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

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

20. As used in this section:

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

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

(a) "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. 13. NAC 459.1997 is hereby amended to read as follows:

NAC 459.1997 Adoption by reference and revision of certain provisions of federal regulations regarding packaging and transportation of radioactive material. (NRS 459.201) The provisions of 10 C.F.R. §§ 71.0(c), 71.1(a), 71.3, 71.4, 71.15, 71.17, ~~[71.19(a), 71.19(b), 71.19(c)]~~ 71.20 to to 71.23, inclusive, 71.47, 71.83 to 71.89, inclusive, 71.97, 71.101(a), 71.101(b), 71.101(c) ***(1),*** 71.101(g), 71.105, 71.127 to 71.137, inclusive, and Appendix A to Part 71, ~~[as those provisions existed on November 14, 2007,]~~ are hereby adopted by reference, subject to the following:

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

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

2. The substitution of the following rule references:

(a)“NAC 459.737” for “§ 34.31(b) of this chapter” as found in 10 C.F.R. § 71.101(g);
(b) “Subsection 1 of NAC 459.339” for “10 C.F.R § 20.1502”;
(c) “NAC 459.3062” for “10 C.F.R. Part 35”;
(d) “Subsection 5 of NAC 459.3585” for “10 C.F.R. § 20.1906(e)”;
(e) “NAC 459.181” for “10 C.F.R. § 71.5”;
(f) “10 C.F.R. §§ 71.101(a), 71.101(b), 71.101(c)(1), 71.101(g), 71.105 and 71.127 to 71.137, inclusive,” for “subpart H of this part” or “subpart H,” except in 10 C.F.R. §§ 71.17(b), 71.20(b), 71.21(b), 71.22(b) and 71.23(b);
(g) “10 C.F.R. §§ 71.0(c), 71.1(a), 71.3, 71.4, 71.17(c)(2), 71.20(c)(2), 71.21(d)(2), 71.83 to 71.89, inclusive, 71.97, 71.101 ***(a),(***b***),(c)(1),(g),*** ~~[71.101(c), 71.101(g),]~~ 71.105 and 71.127 to 71.137, inclusive,” for “subparts A, G and H of this part”;
(h) “10 C.F.R. § 71.47” for “subparts E and F of this part”; and
(i) “10 C.F.R. §§ 71.101(a), 71.101(b), 71.101(c)(1), 71.101(g), 71.105 and 71.127 to 71.137, inclusive,” for “§§ 71.101 through 71.137.”

3. The substitution of the following terms:

(a) “Division” for:
(1) “Commission” in 10 C.F.R. §§ 71.0(c), 71.17(a), 71.20(a), 71.21(a), 71.22(a), 71.23(a) and 71.101(c)(1);
(2) “Director, Division of Nuclear Security, Office of Nuclear Security and Incident Response” in 10 C.F.R. §§ 71.97(c)(1) and 71.97(f)(1);
(3) “Director, Office of State Programs, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555-0001” in 10 C.F.R. § 71.97(c)(3)(iii); and
(4) “NRC” in 10 C.F.R. § 71.101(f);
(b) “The Nuclear Regulatory Commission or an agreement state” for “Commission” in 10 C.F.R. § 71.3;
(c) “The Governor of Nevada” for:
(1) “The governor of a State” in 10 C.F.R. § 71.97(a);
(2) “Each appropriate governor” in 10 C.F.R. § 71.97(c)(1);
(3) “The governor” in 10 C.F.R. § 71.97(c)(3);
(4) “The governor of the State” in 10 C.F.R. § 71.97(e);
(5) “The governor of each State” in 10 C.F.R. § 71.97(f)(1); and
(6) “A governor” in 10 C.F.R. § 71.97(e);
(d) “State of Nevada” for “State” in 10 C.F.R. §§ 71.97(a), 71.97(b)(2) and 71.97(d)(4);
(e) “The Governor of Nevada’s” for:
(1) “The governor’s” in 10 C.F.R. §§ 71.97(a), 71.97(c)(3), 71.97(e) and 71.97(f)(1);
(2) “Governor’s” in 10 C.F.R. §§ 71.97(c)(1) and 71.97(e); and
(3) “Governors’” in 10 C.F.R. § 71.97(c)(3)(iii);
(f) “Specific or general” for “NRC” in 10 C.F.R. § 71.0(c);
(g) “The Division” for “ATTN: Document Control Desk, Director, Spent Fuel Project Office, Office of Nuclear Material Safety and Safeguards” in 10 C.F.R. § 71.101(c)(1);

(h) "Each" for "Using an appropriate method listed in § 71.1(a), each" in 10 C.F.R. § 71.101(c)(1);

(i) "The material must be contained in a Type A package meeting the requirements of 49 C.F.R. § 173.417(a)" for "The fissile material need not be contained in a package which meets the standards of subparts E and F of this part; however, the material must be contained in a Type A package. The Type A package must also meet the DOT requirements of 49 C.F.R. 173.417(a)" as found in 10 C.F.R. §§ 71.22(a) and 71.23(a);

(j) "Licensee" for "licensee, certificate holder, and applicant for a CoC"; and

(k) "Licensee is" for "licensee, certificate holder, and applicant for a CoC are."

4. Part 71 of Title 10 of the Code of Federal Regulation may be obtained free of cost, online, at: http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&sid=f3096f3410283aa25d7d62bbd1fc1166&rgn=div5&view=text&node=10:2.0.1.1.11&idno=10

Sec. 14. NAC 459.198 is hereby amended to read as follows:

NAC 459.198 Terms and conditions of licenses. (NRS 459.201)

1. Each license issued pursuant to NAC 459.180 to 459.950, inclusive, 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.***(a)*** No license issued or granted under NAC 459.180 to 459.950, inclusive, 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.

(b) An application for transfer of license must include the following information:

(i)Identity; technical qualifications; and financial qualifications as determined, based on a copy of the financial report or a certified financial statement, of the proposed transferee; and

(ii)Financial assurance for decommissioning information required by NAC 459.1955.

3. Each person licensed by the Division pursuant to NAC 459.180 to 459.950, inclusive, or each person seeking a license, shall:

(a) Confine his or her 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 or her business if the transaction involves the transfer of a source of radiation to another person.

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

(1) The licensee;

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

(3) An affiliate, as that term is defined in 11 U.S.C. § 101(2), of the licensee.

(d) Keep records of information important to the safe and effective decommissioning of the facility where the radioactive material is located in a location identified to the Division until the license is terminated by the Division. If records of information relevant to decommissioning are

kept for other purposes, references to those records and their locations may be used. Such information must include:

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

(2) Any available drawings of structures and equipment of the facility, as originally built and as modified, which are located in restricted areas where radioactive materials are used or stored, and of locations of inaccessible areas to which contaminants may spread, such as buried pipes which may be subject to contamination. If drawings are not available, the licensee shall provide to the Division other appropriate records of information concerning these areas.

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

4. Each person licensed by the Division pursuant to NAC 459.180 to 459.950, inclusive, ***and sections 20 to 45, inclusive, of this regulation*** who uses a portable gauge shall use ***the following when the gauge is not under the control and constant surveillance of the licensee:***

(a) A minimum of two independent physical controls that form tangible barriers to secure the portable gauge from unauthorized removal; ***and*** ~~[when the portable gauge is not under the control and constant surveillance of the licensee.]~~ ***]***

(b) A source locking mechanism to prevent accidental exposure to radiation.

5. Each person licensed by the Division pursuant to NAC 459.180 to 459.950, inclusive, and sections 20 to 45, inclusive, of this regulation shall conduct a physical inventory every six months or in accordance with state and federal regulations, whichever is more restrictive, to account for all sources and devices received and possessed under the license. Records of inventories shall be maintained for three years from the date of each inventory and shall include the quantities and kinds of radioactive material, manufacturer's name and model numbers, location of the sources and devices, and the date of the inventory.

~~[5.]~~ ***6.*** Each person licensed by the Division pursuant to NAC 459.180 to 459.950, inclusive, who prepares technetium-99m radiopharmaceuticals from molybdenum-99 and technetium-99m generators or who prepares rubidium-82 from strontium-82 and rubidium-82 generators shall:

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

(b)Report breakthrough levels of molybdenum-99 or strontium-82 and strontium -85, that are above permissible limits; and

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

~~[6]~~ ***7.*** Each licensee authorized pursuant to NAC 459.236 to produce positron emission tomography radioactive drugs for noncommercial distribution to medical use licensees in its consortium shall:

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

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

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

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

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

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

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

Sec. 15. NAC 459.202 is hereby amended to read as follows:

NAC 459.202 Renewal of specific licenses. (NRS 459.201) 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 ***within 30 days from date of expiration;*** 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. 16. NAC 459.261 is hereby amended to read as following:

NAC 459.261 Specific licenses: Use of sealed sources in well logging. (NRS 459.201)

1. In addition to the requirements set forth in NAC 459.238 ***for radioactive materials***, a specific license for use of sealed sources in well logging will be issued if:

(a) The applicant develops a satisfactory program for training logging supervisors and logging assistants and submits to the Division a description of the program which specifies the:

(1) Initial training;

(2) On-the-job training;

(3) Annual safety reviews that will be made by the licensee;

(4) Means the applicant will use to demonstrate the logging supervisor's knowledge and understanding of and ability to comply with the Division's regulations and licensing requirements and the applicant's operating and emergency procedures; and

(5) Means the applicant will use to demonstrate the logging assistant's knowledge and understanding of an ability to comply with the applicant's operating and emergency procedures.

(b) The applicant has established and submits to the Division satisfactory written operating and emergency procedures.

(c) The applicant has established and submits to the Division a satisfactory program for annual inspections of the job performance of each logging supervisor to ensure that the Division's regulations, licensing requirements and the applicant's operating and emergency procedures are followed.

(d) The applicant submits to the Division a satisfactory description of its overall organizational structure as it applies to the radiation safety responsibilities in well logging, including specified delegations of authority and responsibility.

2. If an applicant wants to perform leak testing of sealed sources, he or she must submit to the Division the identification of the manufacturers and the model numbers of the leak test kits to be used.

3. If an applicant wants to analyze his or her own wipe samples the applicant must submit satisfactory procedures to the Division which describe:

(a) The instruments that will be used;

(b) The methods of performing the analysis; and

(c) The pertinent experience of the person who will analyze the wipe samples.

Sec. 17. NAC 459.3062 is hereby amended to read as follows:

NAC 459.3062 Adoption by reference and revision of certain provisions of federal regulations regarding medical use of radioactive material. (NRS 459.201)

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

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

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

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

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

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

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

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

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

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

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

(6) "10 CFR 20.1301(c)" or "§ 20.1301(c)" shall be deemed to mean "subsection 2 of NAC 459.335."

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

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

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

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

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

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

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

(14) "10 CFR Part 170," "10 CFR 170," "10 CFR Part 171" or "10 CFR 171" shall be deemed to mean "NAC 459.310."

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

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

(17) "Commission's regulations," "federal regulations" or "NRC regulations" shall be deemed a reference to "NAC 459.010 to 459.950, inclusive."

(18) "NRC Form 313" shall be deemed a reference to ~~[~~"NRC Form 5," Application for Radioactive Material License, specified by the Division.~~]~~ ***the Medical Use of Radioactive Materials License Application Form which is found at the Nevada State Health Division's website under Radiological Forms.***

(19) "NRC license" shall be deemed a reference to "license issued by the Division pursuant to NAC 459.010 to459.950, inclusive."

(20) "NRC Operations Center," "NRC Regional Office listed in § 30.6" or "Director, Office of Nuclear Safety and Safeguards" shall be deemed a reference to "the provisions of NAC 459.134 and the contact information described in the State of Nevada Radiological Emergency Response Plan."

(21) "NRC or an Agreement State," "Commission or an Agreement State" or "Commission or by an Agreement State" shall be deemed a reference to "Division, Nuclear Regulatory Commission or an agreement state."

(f) The text of 10 C.F.R. § 35.491(b)(3) shall be deemed to read "Has obtained written attestation, signed by a preceptor authorized user who meets the requirements in ***§35.57,*** § 35.490 or § 35.491 or equivalent requirements of an Agreement State, that the individual has satisfactorily completed the requirements in paragraph (b)(1) and (b)(2) of this section and has achieved a level of competency sufficient to function independently as an authorized user of strontium-90 for ophthalmic use."

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

2. A copy of the volume containing 10 C.F.R. Part 35 may be obtained ~~[~~by mail from the Superintendent of Documents, U.S. Government Printing Office, P.O. Box 979050, St. Louis, Missouri 63197-9000, or by toll-free telephone at (866) 512-1800, at a cost of $67, or free of charge at the Internet address http://www.gpoaccess.gov/cfr/index.html.~~]~~ ***online, free of charge, at http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&sid=f40742ec5c8c22b39d190d7a40c767db&rgn=div5&view=text&node=10:1.0.1.1.25&idno=10.***

Sec. 18. NAC 459.313 is hereby amended to read as follows:

NAC 459.313 Shipment of radioactive waste or by-product material for disposal at licensed land disposal facility. (NRS 459.201)

1. Any waste generator, waste collector, or waste processor licensee, as defined in NAC 459, Sections 1146, 1147 & 1148, who transfers low-level radioactive waste by shipping either directly, or indirectly through a waste collector or waste processor, to a licensed low-level waste land disposal facility as defined in NAC 459.0475, is governed by the requirements of this section and Appendix G to 10 CFR Part 20.

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

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

4. ~~[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.

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

Sec. 19. NAC 459.3174 is hereby amended to read as follows:

NAC 459.3174 Requirements for issuance of any license – ***Minimization of Contamination.*** ***(***NRS 459.030, 459.201) An applicant for any license issued by the Division pursuant to NAC 459.010 to 459.950, inclusive, except an applicant for the renewal of a license, must describe in the application how facility design and procedures for operation will:

1. Minimize, to the extent practicable, the:

(a) Contamination of the facility and environment; and

(b) Generation of radioactive waste; and

2. Facilitate eventual decommissioning.

3. Licensees shall, to the extent practical, conduct operations to minimize the introduction of residual radioactivity into the site, including the subsurface, in accordance with the existing radiation protection requirements in NAC 459.321 and radiological criteria for license termination pursuant to NAC 459.316 to 459.3184.

Sec. 20. NAC 459.318 is hereby amended to read as follows:

NAC 459.318 Property of decommissioned facility: Eligibility for release for restricted use. (NRS 459.030,459.201)

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:

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. ***Determination of the levels which are as low as reasonably achievable (ALARA) must take into account consideration of any detriments, such as traffic accidents, expected to potentially result from decontamination and waste disposal;***

(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]~~ ***a trust*** that is segregated from the assets of the licensee and outside the administrative control of the licensee ~~[as described in paragraph (a) of subsection 11 of NAC 459.1955;]~~ ***and in which the adequacy of the trust funds is to be assessed based on an assumed annual one percent real rate of return or investment;***

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

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

~~[(d)]~~ ***(c)*** 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. 21. NAC 459.3182 is hereby amended to read as follows:

NAC 459.3182 Property of decommissioned facility: Alternate criteria for release for restricted or unrestricted use. (NRS 459.030)

1. The Division may terminate a license and release the property of a decommissioned facility for restricted or unrestricted use using alternate criteria greater than the dose criterion of 25 millirem (0.25 millisievert) per year set forth in NAC 459.3178 and paragraph (b) of subsection 1 of NAC 459.318 if the licensee:

(a) By submitting an analysis of possible sources of exposure, provides reasonable assurance that:

(1) The public health and safety will continue to be protected; and

(2) It is unlikely that the dose from all artificially created sources combined, other than medical, would be more than the limit of 0.1 rem (1 millisievert) per year set forth in NAC 459.335;

(b) Has employed, to the extent practical, restrictions on site use according to the provisions of NAC 459.318 in minimizing exposures at the site;

(c) Reduces doses to levels that are as low as is reasonably achievable ~~[; and]~~***, taking into consideration any detriments such as traffic accidents expected to potentially result from decontamination and waste disposal;***

(d)Has provided sufficient financial assurance in the form of a trust fund to enable an independent third party, including a governmental custodian of a site, to assume and carry out responsibilities for any necessary control and maintenance of the site; and

~~[(d)]~~ ***(e)***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 proposes to decommission pursuant to the alternate criteria provisions of this section; and

(3) Documents how the advice of natural 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.

2. To satisfy the public comment requirement of subparagraph (3) of paragraph (d) of subsection 1, a licensee shall:

(a) Provide an opportunity for participation by representatives of a broad cross section of community interests;

(b) Provide an opportunity for a comprehensive, collective discussion on the issues by the participants represented; and

(c) Make publicly available a summary of the results of all such discussions, including, without limitation:

(1) A description of the individual viewpoints of the participants on the issues; and

(2) The extent of agreement and disagreement among the participants on the issues.

3. Before the Division terminates a license using the alternate criteria of this section, the Division will consider the recommendations of the staff of the Division concerning any comments provided by the Environmental Protection Agency and any public comments submitted pursuant to NAC 459.3184.

Sec. 22. NAC 459.335 is hereby amended to read as follows:

NAC 459.335 Dose limits for individual members of public; application for authorization to increase annual dose limit; imposition of additional restrictions; standards for nuclear power operations. (NRS 459.030, 459.201)

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 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 10 C.F.R. § 35.75, does not exceed 0.002 rem (0.02 millisievert) 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]~~ ***authorized user*** 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 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 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 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.

4. The Division may impose additional restrictions on radiation levels in unrestricted areas and on the total quantity of radionuclides that a licensee may 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. 23. NAC 459.337 is hereby amended to read as follows:

NAC 459.337 Surveys and monitoring. (NRS 459.030, 459.201)

1. Each licensee and registrant shall make, or cause to be made, surveys ~~[that:]~~ ***of areas, including the subsurface, that:***

(a) Are necessary for the licensee or registrant to comply with NAC 459.010 to 459.950, inclusive; and

(b) Are necessary under the circumstances to evaluate:

(1) The magnitude and extent of radiation levels;

(2) Concentrations or quantities of ~~[radioactive material]~~ ***residual radioactivity***; and

(3) The potential radiological hazards ***of the radiation levels and residual radioactivity detected.***

2. The Division may exempt a licensee or registrant from the requirements of subsection 1 if the Division determines that the exemption will not result in a significant risk to public health and safety.

3. Notwithstanding NAC 459.3645.1, records from surveys describing the location and amount of subsurface residual radioactivity identified at the site must be kept with records important for decommissioning, and such records must be retained in accordance with NAC 459.1955.12.

~~[3.]~~ ***4.*** The licensee or registrant shall ensure that instruments and equipment used for quantitative radiation measurements are calibrated for the radiation measured at intervals not to exceed 12 months.

~~[4.]~~ ***5.*** All personnel dosimeters, except for direct and indirect reading pocket ionization chambers and those dosimeters used to measure the dose to any extremity, that require processing to determine the dose of radiation and that are used by licensees and registrants to comply with NAC 459.325, with other applicable provisions of NAC 459.010 to 459.950, inclusive, or with conditions specified in a license or registration, must be processed and evaluated by a dosimetry processor who is accredited by the National Voluntary Laboratory Accreditation Program of the National Institute of Standards and Technology for the type of radiation or radiations included in the program that most closely approximate the type of radiation for which the person wearing the dosimeter is monitored.

~~[5.]~~ ***6.*** The licensee or registrant shall ensure that adequate precautions are taken to prevent a deceptive exposure of personnel monitoring equipment.

Sec. 24. NAC 459.3585 is hereby amended to read as follows:

NAC 459.3585 Precautionary procedures: Receiving, monitoring and opening packages. (NRS 459.201)

1. Each licensee who expects to receive a package containing quantities of radioactive material in excess of a type A quantity, as defined in 10 C.F.R. § 71.4, ~~[as that section existed on November 14, 2007,]~~ shall make arrangements to receive:

(a) The package when the carrier offers it for delivery; or

(b) Notification of the arrival of the package at the terminal of the carrier and to take possession of the package expeditiously.

2. Except as otherwise provided in subsection 6, each licensee shall monitor the external surfaces of a package known to contain radioactive material for radioactive contamination and radiation levels if the package:

(a) Is labeled as containing radioactive material; or

(b) Has evidence of potential contamination.

3. The licensee shall perform the monitoring required by subsection 2 as soon as practicable after receipt of the package, but not later than 3 hours after the package is received at the facility of the licensee if the package is received during the normal working hours of the licensee. If the package is received after the normal working hours of the licensee, the monitoring must be performed not later than 3 hours after the beginning of the next normal working day of the licensee.

4. A licensee shall immediately notify the carrier who made the final delivery of a package and, by telephone and telegram, mailgram or facsimile, the Division if:

(a) Removable radioactive contamination on the surface of the package is detected that exceeds 22,000 disintegrations per minute per 100 square centimeters of package surface; or

(b) The radiation level at 1 meter from the surface of the package exceeds 10 milliroentgens per hour.

5. Each licensee shall:

(a) Establish, maintain and retain written procedures for safely opening packages in which radioactive material is received; and

(b) Ensure that the procedures established pursuant to paragraph (a) are followed and that consideration is given to any special instructions for the type of package being opened.

6. A licensee transferring a source of radiation in a special form in a motor vehicle owned or operated by the licensee to and from a work site is not required to comply with the requirements of subsection 2, but shall ensure that the source of radiation is still properly lodged in its shield.

Sec. 25. NAC 459.737 is hereby amended to read as follows:

NAC 459.737 Adoption by reference of certain provisions of Code of Federal Regulations; revision of certain terms. (NRS 459.030, 459.201)

1. In addition to any applicable requirement of NAC 459.010 to 459.794, inclusive, a person licensed by the Division to use a sealed source to engage in industrial radiography shall comply with all applicable requirements of, and may rely on all applicable exclusions or exemptions included in, the provisions of Part 34 of Title 10 of the Code of Federal Regulations, as adopted by reference in this section. The provisions of this subsection do not apply to a person using an electronic source of radiation to conduct industrial radiography.

2. Part 34 of Title 10 of the Code of Federal Regulations, ~~[as those provisions existed on January 31, 2008,]~~ is hereby adopted by reference, subject to the following:

(a) The exclusion of references within 10 C.F.R. Part 34 to Part "21" and to 10 C.F.R. §§ "21.21," "30.7," "30.9" and "30.10";

(b) The exclusion of "offshore" specified in the definition of "offshore platform radiography" set forth in 10 C.F.R. § 34.3;

(c) The substitution of the following wording:

(1) "Chapter 459 of the Nevada Administrative Code" for a reference to:

(I) "Commission's regulations," except as stated in subparagraph 6;

(II) "Federal regulations";

(III) "NRC regulations"; and

(IV) "This chapter" as stated in 10 C.F.R. § 34.101(a);

(2) "Division" for the reference to "Commission," except as stated in 10 C.F.R. § 34.20 and subsubparagraph (IV) of subparagraph 3;

(3) "Division, Nuclear Regulatory Commission or an agreement state" for references to:

(I) "NRC or an Agreement State";

(II) "Commission or by an Agreement State";

(III) "Commission or an Agreement State"; and

(IV) "Commission" in 10 C.F.R. § 34.43(a)(2);

(4) "License" for reference to "NRC license(s)";

(5) In 10 C.F.R. § 34.27(d), "reports of test results for leaking or contaminated sealed sources shall be made pursuant to NAC 459.307" for a reference to the following statement, "A report must be filed with the Director of Nuclear Material Safety and Safeguards, by an appropriate method listed in § 30.6(a) of this chapter, the report to be filed within 5 days of any test with results that exceed the threshold in this paragraph (d), and to describe the equipment involved, the test results, and the corrective action taken. A copy of the report must be sent to the Administrator of the appropriate Nuclear Regulatory Commission's Regional Office listed in appendix D of 10 C.F.R. part 20 of this chapter 'Standards for Protection against Radiation.' ";

(6) In 10 C.F.R. § 34.27(d), "subsection 3 of NAC 459.307" for the reference to "Commission regulations";

(7) In 10 C.F.R. § 34.43(a)(1), "10 C.F.R. § 30.6" for the reference to "§ 30.6(a) of this chapter";

(8) In 10 C.F.R. § 34.89, "a Nuclear Regulatory Commission or an agreement state" for the reference to "the Agreement State";

(9) In 10 C.F.R. § 34.101(a), "Division" for the reference to "NRC's Office of Federal and State Materials and Environmental Management Programs, by an appropriate method listed in § 30.6(a) of this chapter";

(10) In 10 C.F.R. § 34.101(c), "Division" for the reference to "appropriate NRC regional office listed in § 30.6(a)(2) of this chapter";

(11) In Item 12, Section I of Appendix A to 10 C.F.R. Part 34, "Division, the United States Nuclear Regulatory Commission and other independent certifying organizations or agreement states" for the reference to "Commission and other independent certifying organizations and/or Agreement States";

(12) In Item 1, Section II of Appendix A to 10 C.F.R. Part 34, "equivalent Nuclear Regulatory Commission or agreement state regulations" for the reference to "equivalent Agreement State regulations"; and

(13) In Item 2(c), Section II of Appendix A to 10 C.F.R. Part 34, "a Nevada, Nuclear Regulatory Commission or an agreement state licensee" for the reference to "an Agreement State or a NRC licensee"; and

(d) The substitution of the following:

(1) "Subsection 1 of NAC 459.120" for the reference to "10 CFR 34.111";

(2) "NAC 459.320 to 459.374, inclusive," for the reference to "10 CFR 20";

(3) "Paragraph (a) of subsection 1 of NAC 459.341" for the reference to "10 CFR 20.1601(a)(1)";

(4) "Subsections 1 and 2 of NAC 459.3555" for the reference to "10 CFR 20.1902(a) and (b)";

(5) "NAC 459.3565" for the reference to "10 CFR 20.1903";

(6) "NAC 459.371" for the reference to "10 CFR 20.2203";

(7) "NAC 459.780 to 459.794, inclusive," for the reference to "10 CFR 19";

(8) "NAC 459.210" for the reference to "10 CFR 150.20";

(9) "NAC 459.373" for the reference to "§ 30.50";

(10) "NAC 459.238" for the reference to "10 CFR 30.33"; and

(11) "NAC 459.737" for the reference to "10 CFR 34."

3. The following sections of Part 34 of Title 10 of the Code of Federal Regulations, ~~[as those provisions existed on January 31, 2008,]~~ are not adopted by reference:

(a) Section 34.1;

(b) Section 34.5;

(c) Section 34.8;

(d) Section 34.11;

(e) Section 34.45(a)(9);

(f) Section 34.121; and

(g) Section 34.123.

4. ~~[A copy of a publication that contains]~~ Part 34 of Title 10 of the Code of Federal Regulations may be obtained ~~[by mail from the Superintendent of Documents, United States Government Printing Office, P.O. Box 979050, St. Louis, Missouri 63197-9000, or by toll-free telephone at (866) 512-1800, at the price of $67,]~~ or free of charge ~~[at the Internet addresshttp://www.gpoaccess.gov/cfr/index.html.]~~ ***online at http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&sid=279a30210b436c98e66f7cebb2fcacc3&rgn=div5&view=text&node=10:1.0.1.1.24&idno=10***

Chapter 459 of NAC is hereby amended by adding thereto the provisions set forth as sections 26 to 30, inclusive, of this regulation.

Sec.26. ***"Administrative Monetary Penalty" defined: "Administrative monetary penalty" means a monetary fine that does not require the filing of civil or criminal charges.***

Sec.27. 1. The Health Division shall enforce the provisions of NAC 459.010 to 459.950 inclusive, Chapter 459 of the NRS, any applicable state or federal laws, or any rules, regulations and orders or any terms, conditions or limitations adopted pursuant to those sections.

Sec. 28. In addition to the grounds for disciplinary action set forth in chapter 459 of NRS, the Health Division may deny, withdraw or suspend an application for renewal of a license, registration or certificate, if any person, licensee or registrant or employee, contractor or subcontractor of a person, licensee or registrant or an employee of a contractor or subcontractor of a person, licensee or registrant, who receives, possesses, uses, transfers, owns or acquires any source of radiation or operates a radiation producing machine except as otherwise specifically provided in NAC 459.010 to 459.950, inclusive:

- ***(a) Violates the provisions of this chapter, chapter 459 of the NRS, or any other applicable state or federal laws or regulations;***
- ***(b) Violates any rule, regulation, or order issued pursuant to the provisions of NAC 459.010 to NAC 459.950, inclusive and chapter 459 of the NRS or any other applicable state or federal laws or regulations;***
- ***(c) Violates any term, condition, or limitation of any license issued under the provisions of NAC 459.010 to NAC 459.950, inclusive and chapter 459 of the NRS or any other applicable state or federal laws or regulations;***
- ***(d) Permits an employee or contractor or subcontractor or an employee of a contractor or subcontractor, of a person, licensee or registrant, who is under the supervision of the person, licensee or registrant to violate the provisions of this chapter, chapter 459 of the NRS, or any other applicable state or federal laws or regulations;***
- ***(e) Fails or refuses to cooperate with the Health Division during an investigation, evaluation or inspection;***
- ***(f) Fails or refuses to comply with a written request from the Health Division, the United States Nuclear Regulatory Commission or any applicable local or national accreditation `body for records, reports or other materials;***
- ***(g) Provides false or misleading or otherwise inaccurate information on an application for a license or for renewal of a license;***
- ***(h) Has been disciplined by any applicable federal agency, local or national accreditation body or has otherwise been found by the Health Division to have committed unprofessional conduct, including, without limitation, a violation of the code of ethics or professional code of conduct of the federal agency or accreditation body;***
- ***(i) Held a license issued by the Health Division or by the appropriate agency in another jurisdiction and the license was withdrawn, revoked, terminated or suspended; or***
- ***(j) Fails to obtain a required license, registration or certificate required by the provisions of this chapter, chapter 459 of the NRS or any other applicable state or federal laws or regulations;***

Sec. 29.

1. Violations are identified through inspections, evaluations and investigations. All violations are subject to enforcement action. There are three primary enforcement actions: notices of violation, monetary penalties, and orders.

2. A Notice of violation (NOV) is a written notice that concisely identifies a violation of any state or federal law and describes how such laws were allegedly violated. It is required that the person, licensee or registrant submit a written explanation or statement in reply within 20 days of the date of notice or other time specified in the Notice. The staff may allow additional time to respond upon a showing of good cause.

3. An Administrative Monetary Penalty is a monetary fine that is used to emphasize compliance in a manner that deters future violations and focuses the person's, licensee's or registrant's attention on significant violations, without the filing of civil or criminal charges.

4. Orders are used to modify, suspend, or revoke licenses or require specific actions by persons, licensees or registrants. Orders are also used to impose monetary penalties.

Sec. 30.

1. ***The Health Division may impose an administrative monetary penalty, not to exceed $2,000, per violation, per day, against any person, licensee or registrant or employee, contractor or subcontractor of a person, licensee or registrant or an employee of a contractor or subcontractor of a person, licensee or registrant, responsible for a violation of the provisions of NAC 459.010 to NAC 459.950 inclusive and NRS 459, inclusive, or for a violation of any rule, regulation, or order or any term, condition, or limitation of any license issued pursuant to the provisions of NAC 459.010 to NAC 459.950, inclusive and NRS 459 inclusive, or any other applicable state or federal laws or regulations. If the violation is of a continuing nature, each day during which it continues constitutes an additional, separate and distinct offense.***

2. ***The Health Division may impose an administrative monetary penalty for a Health and Safety violation, not to exceed $5,000, per violation, per day, against any person, licensee or registrant or employee, contractor or subcontractor of a person, licensee or registrant or an employee of a contractor or subcontractor of a person, licensee or registrant, responsible for a violation of the provisions of NAC 459.010 to NAC 459.950 inclusive and NRS 459, inclusive, or for a violation of any rule, regulation, or order or any term, condition, or limitation of any license issued pursuant to the provisions of NAC 459.010 to NAC 459.950, inclusive and any other applicable state or federal laws or regulations. If the violation is of a continuing nature, each day during which it continues constitutes an additional, separate and distinct offense.***

3. ***The Health Division may recover actual expenses which result from a violation, in addition to the penalty provided in subsections 1 and 2. The expenses may include but are not limited to expenses incurred by the Division in removing, correcting, cleaning-up or terminating any adverse effects which resulted from the violation.***

4. ***No penalty may be levied until after notification to the violator by certified mail or personal service. The notice must include a reference to the section of the statute, regulation, order or condition of a permit violated, a concise statement of the facts alleged to constitute the violation, a statement of the amount of the civil penalties to be imposed and a statement of the violator's right to a hearing. The violator has 20 days after receipt of the notice within which to deliver to the Division a written request for a hearing. After the hearing, if requested, and upon a finding that a violation has occurred, the Administrator of the Division may issue a final order and assess the amount of the fine. If no hearing is requested, the notice becomes a final order upon the expiration of the 20-day period. Payment of the penalty is due when a final order is issued or when the notice becomes a final order. The authority to levy a monetary***

penalty is in addition to all other provisions for enforcement of Chapter 459 of the NRS, and the payment of a monetary penalty does not affect the availability of any other provision for enforcement in connection with the violation for which the penalty is levied.

5. *Any money collected as a result of monetary penalties imposed pursuant to subsections 1, 2 and 3, must be accounted for separately and used for education, outreach and training, involving ionizing radiation, radiation producing machines and radioactive materials, for all licensees and registrants.*

6. *The administrative monetary penalty will be reduced, at the discretion of the Division, if there is evidence to show that the person, licensee or registrant or employee, contractor or subcontractor of a person, licensee or registrant or an employee of a contractor or subcontractor of a person, licensee or registrant, has initiated, in good faith, comprehensive corrective measures and or training related to radiation safety and preparedness, over and above that required as a response to the violation, valued at at least 1.5 times the amount of monetary penalty imposed.*

7. *Administrative Monetary Penalty for Inadequate Notice for Reciprocity:*
   In violation of the terms of NAC 459.210.1.(b), if an out-of-state person, licensee or registrant or employee, contractor or subcontractor of a person, licensee or registrant or an employee of a contractor or subcontractor of a person, licensee or registrant, fails to notify the Division, in writing, at least 3 business days before engaging in the proposed activity, an additional fee of $500.00 must be paid to process the request on an expedited basis.
8. *Administrative Monetary Penalty for failure to obtain Reciprocity before entering the State of Nevada:*
   In violation of the terms of NAC 459.210.1.(b), if an out-of-state person, licensee or registrant or employee, contractor or subcontractor of a person, licensee or registrant or an employee of a contractor or subcontractor of a person, licensee or registrant, fails to receive written permission from the Division to proceed with the proposed activity in the State of Nevada, before entering the state, a monetary penalty equal to the fee amount must be paid in addition to the fee for the proposed activity.

Sec.31. Chapter 459 of NAC is hereby amended by adding thereto a new section to read as follows:

Radiation Safety Officer Requirements - Education, Training and Experience:

1. The proposed RSO is an individual who either before obtaining licensed materials or before being named as the RSO, will have successfully completed the training described below:

a) For medical use of radioactive material:
10 CFR 35.2 as adopted by reference pursuant to NAC 459.3062. (See h.)

b) For industrial radiography:
FR 34.42 as adopted by reference pursuant to NAC 459.737.

c) For Portable Gauges Licenses:

1) Portable gauge manufacturer's course for users or for RSOs; or

2) Equivalent course that meets the following criteria:

(I).1.5 to 2 hours of radiation safety and regulatory requirements, emphasizing practical subjects important to safe use of the gauge; radiation vs. contamination; internal vs. external exposure; concept of time, distance, and shielding to minimize exposure; control and surveillance of gauges; location of sealed source within the portable gauge; inventory; recordkeeping; incidents; licensing and inspection by regulatory agency; need for complete and accurate information; employee protection; deliberate misconduct.

(II). 1.5 to 2 hours of practical explanation of portable gauge theory and operation; operating, emergency, maintenance, and transportation procedures; and field training emphasizing radiation safety and including test runs of setting up and making measurements with the gauge, controlling and maintaining surveillance over the portable gauge, performing routine cleaning and lubrication, packaging and transporting the gauge, storing the gauge, and following emergency procedures.

(III). At least a 70-percent score on a 25-to-50-question, closed-book written test, administered by a qualified instructor, as defined by NUREG 1556, Volume 1.

(IV). There should be:

i. An emphasis on radiation safety of portable gauge storage, use, sealed source location, maintenance, and transportation, rather than the theory and art of making portable gauge measurements;

ii. A review of correct answers to missed questions with prospective gauge user immediately following the scoring of the test.

(d)For Fixed Gauge Licenses:

Fixed gauge manufacturer's or distributor's course for users or for RSOs; or

Equivalent course meeting the following criteria:

Classroom training in the form of lecture, videotape, or self-study emphasizing practical subjects important to safe use of the gauge including:

(1) Radiation Safety:

I. Radiation vs. contamination

II. Internal vs. external exposure

III. Biological effects of radiation

IV. Types and relative hazards of radioactive material possessed

V. ALARA concept

VI. Use of time, distance, and shielding to minimize exposure

VII. Location of sealed source within the gauge

(2) Regulatory Requirements:

I. Applicable regulations

II. License conditions, amendments, renewals

III. Locations of use and storage of radioactive materials

IV. Material control and accountability

V. Annual audit of radiation safety program

VI. Transfer and disposal

VII. Recordkeeping

VIII. Prior events involving fixed gauges

IX. Handling incidents

X. Recognizing and ensuring that radiation warning signs are visibleand legible
XI. Licensing and inspection by regulatory agency
XII. Need for complete and accurate information
XIII. Employee protection
XIV. Deliberate misconduct

(3) Practical Explanation of the Theory and Operation for Each Gauge Possessed by the Licensee:

I. Operating and emergency procedures
II. Routine vs. non-Routine maintenance
III. Lock-out procedures

And

On-the-job training done under the supervision of an Authorized User (AU) or RSO which includes supervised hands-on experience performing:

1) Operating procedures
2) Test runs of emergency procedures
3) Routine maintenance
4) Lock-out procedures

Management will ensure that proposed RSOs are qualified to work independently with and are knowledgeable of the radiation safety aspects of all types of gauges to be possessed by the applicant. This may be demonstrated by written or oral examination or by observation.

Additional training is required for RSOs of programs that perform non-routine operations. This includes repairs involving or potentially affecting components related to the radiological safety of the gauge (e.g., the source, source holder, source drive mechanism, shutter, shutter control, or shielding) and any other activities during which personnel could receive radiation doses exceeding safe limits (e.g., installation, initial radiation survey, gauge relocation, and removal of the gauge from service).

(e) For self- shielded irradiator Licenses:

Training in the form of lecture, videotape, hands-on, or self-study, and emphasizing practical subjects important to the safe use of the self-shielded irradiators including:

(1). Radiation Safety

I. Radiation vs. contamination
II. Internal vs. external exposure
III. Biological effects of radiation
IV. Types and relative hazards of radioactive material possessed
V. ALARA concept
VI. Use of time, distance, and shielding to minimize exposure

VII. Use of radiation detection instruments.

(2).Regulatory Requirements

I. Locations of use and storage of radioactive materials
II. Material control and accountability
III. Annual audit of radiation safety program
IV. License conditions, amendments, renewals
V. Transfer and disposal
VI. Recordkeeping
VII. Handling incidents
VIII. Licensing and inspection by regulatory agency
IX. Need for complete and accurate information
X. Employee protection
XI. Deliberate misconduct.

(3).Practical explanation of the theory and operation for each irradiator possessed by the licensee including:

I. Routine vs. non-routine maintenance
II. Operating and emergency procedures
III. Prior events involving self-shielded irradiators.

Management will ensure that potential RSOs and authorized users are qualified to work independently with each type of the licensee's irradiators. This may be demonstrated by written or oral examination or by observation.

(f). For Irradiator Licenses:

If the proposed RSO:

(1) Has had neither previous formal training in health physics nor certification by the American Board of Health Physics:

Complete a general radiation safety course. Training should include approximately 40 hours covering the following topics:

I. Radioactivity and radioactive decay;
II. Interactions of radiation with matter;
III. Biological effects of radiation;
IV. Radiation detection using radiation detection instruments and personnel dosimeters;
V. Basic radiation protection principles and good safety practices (including time, distance, and shielding); and
VI. Radiation protection regulations.

The course should include a written test or evaluation of the individual's comprehension of these topics.

AND

Complete a self-study or directed study for at least 40 hours as described in subsection 2.

(2) Was previously an RSO at a similar licensee or was trained as an irradiator operator but has not had experience working at an irradiator:

In addition to the above general course, should have the equivalent of at least 40 hours in self-study or directed study on information directly applicable to radiation safety at irradiators. This should include applicable regulations (10 CFR Parts 20 and 36) and reports or studies describing case histories of accidents or problems at irradiators. The license application should list the documents studied or to be studied in the description of the training of the proposed RSO and should describe how the applicant will evaluate the individual's comprehension of the information studied. The topics covered should include:

Radiation Safety:

I. External radiation vs. radioactive contamination
II. Internal vs. external exposure
III. Biological effects of radiation (e.g., why large radiation doses must be avoided)
IV. Units of radiation dose
V. Types and relative hazards of radioactive material possessed
VI. ALARA concept
VII. Use of time, distance, and shielding to minimize exposure (e.g., how shielding and access controls prevent large doses)
VIII. Proper use of survey meters and personnel dosimeters.

Regulatory Requirements:

I. Applicable regulations
II. NRC dose limits
III. License conditions, amendments, renewals
IV. Locations of use and storage of radioactive materials
V. Material control and accountability
VI. Annual audit of radiation safety program
VII. Transfer and disposal
VIII. Record keeping
IX. Case histories of accidents or problems involving irradiators
X. Handling incidents
XI. Recognizing and ensuring that radiation warning signs are visible and legible
XII. Licensing and inspection by regulatory agency
XIII. Need for complete and accurate information (10 CFR 30.9)
XIV. Employee protection (10 CFR 30.7)

XV. Deliberate misconduct (10 CFR 30.10).

Practical Explanation of the Theory and Operation for Irradiators:

I. Basic function of the irradiator

II. Radiation safety features of an irradiator

III. Operating and emergency procedures which the individual is responsible for performing

IV. Routine vs. non-routine maintenance

V. Lock-out procedures

VI. How an irradiator is designed to prevent contamination.

On-the-job or simulator training must be done under the supervision of a qualified irradiator operator. Supervised hands-on experience should include performing the following:

I. Operating procedures which the individual is responsible for performing

II. Test runs of emergency procedures which the individual is responsible for performing

III. Routine maintenance

IV. Lock-out procedures.

There should be:

A written examination designed to verify an individual's competency and understanding of the subject matter (e.g., 25 to 50 question, closed-book written test with 70% as passing grade).

An emphasis on radiation safety of irradiator operations and maintenance, licensee operating and emergency procedures that the individual will be responsible for performing, and other operations necessary to safely operate the irradiator without supervision.

A review of correct answers to missed questions with prospective irradiator operators immediately following the scoring of the test.

Both subsections 1 and 2 should have at least 3 months (full-time equivalent) of experience at the applicant's irradiator or at another irradiator of a similar type. The 3 months of experience may include preoperational involvement, such as acceptance testing, while the irradiator is being constructed.

To allow flexibility, the Health Division will determine the adequacy of the RSO's training and experience on a case-by-case basis, looking at his or her actual qualifications and drawing on the staff's experience in reviewing such qualifications.

(g) For Academic, Research and Development, and Other Licenses of Limited Scope Including Gas Chromatographs and X-Ray Fluorescence Analyzers:

To demonstrate adequate training and experience, the RSO should have at a minimum:

1)A college degree at the bachelor level, or equivalent training and experience in physical, chemical, biological sciences, or engineering; and

2)Training and experience commensurate with the scope of proposed activities.

Training should include the following subjects:

I. Radiation Protection Principles

II. Characteristics of Ionizing Radiation

III. Units of Radiation Dose and Quantities

IV. Radiation Detection Instrumentation

V. Biological Hazards of Exposure to Radiation (appropriate to types and forms of byproduct material to be used)

VI. NRC Regulatory Requirements and Standards

VII. Hands-on use of radioactive materials.

The amount of training and experience needed will depend upon the type, form, quantity and proposed use of the licensed material requested. Ultimately, the proposed RSO's training and experience should be sufficient to identify and control the anticipated radiation hazards. In addition, the RSO designee should have obtained the above training in a formal course designed for RSOs presented by an academic institution, commercial radiation safety consulting company, or a professional organization of radiation protection experts.

h. For Licenses of Broad Scope:

An individual who is qualified to serve as the RSO will need a basic technical knowledge sufficient to understand, in general, the majority of the work being done with byproduct materials under his or her responsibility. The Division recognizes that an RSO cannot be an expert in all areas that might be involved in a broad scope program. The RSO should be qualified by training and experience to perform the duties required for the position. Executive management should ensure that enough time is allocated to the individual selected as the RSO to carry out the responsibilities of the position.

(1)For Type A and B Broad Scope Licenses:

The Radiation Safety Officer (RSO) should be:

I. Qualified by training and experience in radiation protection, and

II. Available for advice and assistance on radiological safety matters.

III. Training and experience must include the types and quantities of licensed material to be authorized on the license.

IV. Responsible for radiation safety and compliance with the regulations for the use of byproduct material.

V. Qualified by training and experience to perform the following duties required for the position:

i. Is a member of the Radiation Safety Committee (RSC) and works closely with the RSC and executive management in implementing the radiation safety program.

ii. Ensures that radiation safety activities are being performed safely according to approved policies and procedures, and that all regulatory requirements are met.

iii. Has full access to all activities involving the use of byproduct material and the authority to terminate any activity in which health and safety appear to be compromised without consulting with executive management or the RSC, if required.

iv. In a Type A broad scope licensed program, performs a preliminary review of proposed new uses and users, prior to formally discussing the proposal with the RSC. The RSC grants the formal approval of new users and uses.

v. In a Type B broad scope licensed program, reviews and approves proposed uses and users.

vi. Submits a "Radiation Safety Officer Delegation of Authority" signed by executive management.

(2) Type C Broad Scope Licenses:

While it is not required by regulation to have a RSO, it is recommended that management appoint one to be responsible for the day-to-day operation of the radiation safety program.

The licensee is required to establish administrative controls and provisions relating to procurement of byproduct material, procedures, recordkeeping, material control and accounting, and management review to assure safe operations.

Individuals are qualified as users if they meet the training and experience criteria described in 10 CFR 33.15(b). While no licensee Committee or individual is required by regulation to make the determination that an individual is qualified to use the material possessed, or that a particular use of byproduct material is safe, licensee management is ultimately responsible for assuring safe operations.

The responsibilities of the RSO may not be transferred to other individuals. Many tasks and duties associated with managing the program may be assigned or delegated to other qualified individuals; however, the responsibility for these tasks and duties is with the RSO. The Division does recognize that a qualified individual will have to fill in for the RSO when the RSO will be away for short periods of time for professional conferences, vacation, or illness. However, this should not occur for extended or indefinite periods of time. Consideration should also be given to how this individual would be contacted in the event of an emergency.

The applicant should also be aware of specific regulatory requirements for the particular type of licensed program and for the RSO.

For example, 10 CFR Part 35, as mentioned in subsection (a), contains specific requirements for an RSO in a medical program. However, an individual who qualifies as a medical RSO is not necessarily qualified to be RSO in a broad scope program.

Subsection (g) contains guidance that is appropriate for broad scope licensees who are involved in research and development.

(i) For Commercial Radiopharmacy Licenses:

The RSO needs a level of basic technical knowledge sufficient to understand the work to be performed with byproduct materials at the radiopharmacy and to be qualified by training and experience to perform the duties required for that position. Any individual who has sufficient training and experience to be named as an Authorized Nuclear Pharmacist (ANP) is also considered qualified to serve as the facility RSO. The same is true for an Authorized User (AU) who has had adequate training and experience in the radiation safety aspects associated with the use of similar types of byproduct material.

The training and experience requirements for the RSO may be met by any of the following:

I. Qualification as an ANP;

II. Identification as an AU on the license and experience in the use of the types and quantities of licensed material for which the individual has RSO responsibilities; and

III. Didactic and work experience.

In order to demonstrate adequate training and experience, the RSO should have, as a minimum:

I. A college degree at the Bachelor level, or equivalent training and experience in physical, chemical, biological sciences, or engineering; and

II. Training and experience commensurate with the scope of proposed activities. Training should include the following subjects:

i. Radiation protection principles;

ii. Characteristics of ionizing radiation;

iii. Units of radiation dose and quantities;

iv. Radiation detection and measurement instrumentation;

v. Biological hazards of exposure to radiation (appropriate to types and forms of byproduct material to be used);

vi. NRC regulatory requirements and standards; and

vii. Hands-on use of radioactive materials commensurate with the uses proposed by the applicant.

The length of training and experience will depend upon the type, form, quantity, and proposed use of the licensed material requested. The proposed RSO's training and experience should be sufficient to identify and control the anticipated radiation hazards. The requisite training may be obtained from formal courses consisting of lectures and laboratories designed for RSOs presented by academic institutions, commercial radiation safety consulting companies, or appropriate professional organizations. Each hour of training may be counted only once and should be allocated to the most representative topic.

On-the-job training may not be counted toward the hours documenting length of training unless it was obtained as part of a formal training course.

A "formal" training course is one that incorporates the following elements:

A detailed description of the content of the course should be maintained on file at the sponsoring institution and should be made available to the Division upon request;

Evidence that the sponsoring institution has examined the student's knowledge of the course content is maintained on file at the institution and can be made available to the Division upon request. This evidence of the student's overall competency in the course material should include a final grade or percentile; and

A permanent record that the student successfully completed the course is kept at the institution.

The qualifications described above only apply to an RSO for a radiopharmacy that prepares radioactive drugs or redistributes other products.

(j). For Well Logging, Tracer, and Field Flood Study Licenses:

To be considered eligible for the RSO position, the applicant must submit for review the specific training and experience of the proposed RSO and detail his or her duties and responsibilities. The proposed RSO should have had a minimum of 1 year of actual experience as a logging supervisor. The RSO is expected to coordinate the safe use of licensed materials and to ensure compliance with the applicable requirements of the Code of Federal Regulations (e.g., Parts 19, 20, 21, 30, 39, etc.). The RSO should possess a thorough knowledge of management policies, company administrative and operating procedures, and safety procedures related to protection against radiation exposures.

Alternative information demonstrating qualification by training and experience could be Board Certification by the American Board of Health Physicists or completion of a bachelor's and/or master's degree in the sciences with at least one year of experience in the conduct of a radiation safety program of comparable size and scope or listed by name as an authorized user or the RSO on an NRC or Agreement State license that requires a radiation safety program of comparable size and scope.

(k). For Possession Licenses for Production of Radioactive Material Using an Accelerator:

(1) At a minimum, a college degree at the bachelor level or equivalent training and experience in physical, chemical, biological sciences, or engineering; and

(2) Training and experience commensurate with the scope of proposed activities. Training should include the following subjects:

- ***I. Radiation Protection Principles***
- ***II. Characteristics of Ionizing Radiation***
- ***III. Units of Radiation Dose and Quantities***
- ***IV. Radiation Detection Instrumentation***
- ***V. Biological Hazards of Exposure to Radiation (appropriate to types and forms of licensed material to be possessed and used)***
- ***VI. NRC Regulatory Requirements and Standards; and***

VII. Handling of Radioactive Materials in Relation to Production Activities (e.g., maintenance and repair of the accelerator).

The amount of training and experience will depend on the type, form, quantity, and proposed use of the licensed material requested. For instance, in addition to a college degree, RSOs at accelerator facilities where workers may handle curie quantities of radioactive material should be specialists in the field of radiation protection and may need at least 40 hours of radiation safety training specific to their job duties as well as a year of experience with similar types, forms, quantities, and uses of radioactive material before the individual is qualified to be RSO. The proposed RSO's training and experience must be sufficient to identify and control the anticipated radiation hazards. For example, the RSO should have experience planning and conducting evaluations, surveys, and measurements similar to those required by the licensee's Radiation Safety Program. In addition, the RSO designee should have obtained the above training in a formal course designed for RSOs, presented by an academic institution, commercial radiation safety consulting company, or a professional organization of radiation protection experts.

Sec.32 **Chapter 459 of NAC is hereby amended by adding thereto a new section to read as follows:**

"Temporary Job Site" means a location where radioactive materials, radiation producing machines or sources of radiation are stored or used, other than the specific use locations listed on a permit, specific license or certificate of registration.

(a) Storage at a temporary job site exceeding:

(i) 30 days duration requires written notification to the Health Division;

(ii) 180 days requires written authorization from the Health Division.

(b) From one temporary job site storage location, dispatch to another is not permitted, unless authorized by a specific license issued by the State of Nevada.

Sec.33 **NAC 459.150 is hereby amended to read as follows:**

NAC 459.150 Scope of provisions; registration required. (NRS 459.201)

1. NAC 459.150 to 459.166, inclusive, provide for the registration of radiation ***producing*** machines and registration of persons who install or perform service upon radiation ***producing*** machines.

a) All registered machines must be maintained as manufactured or changes made must be as authorized by the manufacturer or the FDA.

b) All parts of the registered system and accessories must be on the machine as manufactured.

c) No registered system can be modified without prior approval of the Health Division.

~~[1.]~~ ***2***.No person may repair, maintain or install radiation ***producing*** machines unless he or she is registered in conformance with the requirement of NAC 459.150 to 459.166, inclusive.

a) No person registered under this section may make alterations to a registered system affecting field size or output unless prior approved by the manufacturer, the FDA or the Health Division. Such approval must be maintained on the premises of the registrant.

b) No person registered under this section shall install a non-certified machine in a facility for human use.

3. A person may operate a radiation ***producing*** machine only if there is a valid registration or the operator is registered with the Division to install, service or repair the machine.

Sec.34 **NAC 459.154 is hereby amended to read as follows:**

NAC 459.154 Applications for registration; temporary use of portable machine. (NRS 439.150, 459.201)

1. Except as otherwise provided in subsection 2, each person who controls an unregistered, operational radiation ***producing*** machine shall apply to the Division for registration of the machine within 30 days after installing the machine.

a) Each machine shall be installed only by a person possessing a certificate of authorization from the division allowing for installation;

b) Each installation shall be reported to the division by the installer in a manner acceptable to the division within ten days after installation. Failure to notify the divisions will subject the installer to a penalty of $100.00 per machine per occurrence.

c) Failure to register an ionizing radiation producing machine after thirty days will subject the controller of the machine to a penalty of $100.00 per day per machine for each day after the thirty day grace period. The thirty day period begins with the date that the installer attests that the installation was accomplished.

2. A person who brings a portable machine into this State for a temporary use of 180 days or less in any calendar year:

(a) Must apply to the Division for registration of the machine for a temporary use at least 3 working days before using it in this State;

(b) Shall comply with all other applicable provisions of NAC 459.010 to 459.950, inclusive;

(c) Shall furnish the Division with any other information it may reasonably request; and

(d) Shall not use the machine in this State more than 180 days per calendar year.

3. The application must be made on the Division's Form NRC-4, Application for Registration of Radiation ***producing*** machine. A copy of the form may be obtained from the Division. A separate application and registration are required for each control console of a radiation ***producing*** machine.

4. Each ***application*** for registration of ~~[an X-ray machine]~~ ***a radiation producing machine,*** must contain a list of the numbers of the X-ray tubes associated with a control panel.

5. Each person who controls a radiation ***producing*** machine must designate on the application form a person where the machine is located who is responsible for protection against radiation.

6. Each person who seeks to engage in the business of installing radiation ***producing*** machines, furnishing services or repairing radiation ***producing*** machines in this State must apply for registration with the Division and receive a certificate of registration before furnishing any services.

7. Each application for registration by a person to install, service or repair radiation ***producing*** machines must be accompanied by a ~~[nonrefundable]~~ annual fee of $140, or the application must not be acted upon by the Division.

Sec.35 **NAC 459.468 is hereby amended to read as follows:**

NAC 459.468 "Maximum line current" defined. (NRS 459.201) "Maximum line current" means the root mean square (rms) current in the supply line of ~~[an X-ray machine]~~ ***a radiation producing machine***, operating at its maximum rating.

Sec.36 **NAC 459.508 is hereby amended to read as follows:**
NAC 459.508 "Source-image receptor distance" defined. (NRS 459.201) "Source-image receptor distance" ***or SID,*** means the distance from the source to the center of the input surface of the image receptor.

Sec.37 **NAC 459.530 is hereby amended to read as follows:**
NAC 459.530 "Variable aperture beam-limiting device" defined. (NRS 459.201) "Variable aperture beam-limiting device" ***also known as an adjustable collimator,*** means a beam-limiting device which has capacity for stepless adjustment of the X-ray field size at a given source-image receptor distance.

Sec.38 **NAC 459.552 is hereby amended to read as follows:**
NAC 459.552 Administrative controls: Direction of operation by registrants. (NRS 459.201)

1. The registrant is responsible for the operation of the ~~[X-ray machine]~~ ***radiation producing machine,*** which he or she has registered with the Division. The registrant shall ensure that the provisions of NAC 459.400 to 459.624, inclusive, are met in the operation of the ~~[X-ray machine]~~ ***radiation producing machine,*** or machines.

2. An X-ray system which does not meet the provisions of NAC 459.400 to 459.624, inclusive, must not be operated for diagnostic or therapeutic purposes if the Division prohibits such operation.

3. Persons who will be operating the X-ray system must be adequately instructed in the safe operating procedures and be competent in the safe use of the equipment. ***Such training and sign-off of competency must be documented and retained during the registration period.***

4. In the vicinity of each control panel for an X-ray system a chart ***referred to as the 'technique chart',*** must be provided, which specifies for all examinations which are performed by that system a listing of information, including but not limited to the following, for each projection within that examination:

(a) Patient's anatomical size versus technique factors to be utilized;
(b) Type of and size of the film or film-screen combination to be used;
(c) Type of grid to be used, if any, and focal distance;
(d) Source to image receptor distance to be used; and
(e) Type and location of placement of gonadal shielding to be used.

5. Written safety procedures and rules must be provided to each person operating X-ray equipment, including any restrictions of the operating technique required for the safe operation of the particular X-ray system. The operator must be able to demonstrate familiarity with these rules.

Sec.39 **NAC 459.554 is hereby amended to read as follows:**
NAC 459.554 Administrative controls: Radiographic exposure. (NRS 459.201)

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 or her receiving 10 percent of the maximum permissible dose, as defined in NAC 459.320 to459.374, 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]~~ ***physician as defined by the Board of Medical Examiners, the State Board of Osteopathic Medicine, the Board of Dental Examiners of Nevada, the State Board of Podiatry, the Chiropractic Physicians' Board of Nevada, State Board of Oriental Medicine, the Board of Homeopathic Medical Examiners or the Nevada State Board of Veterinary Medical Examiners .*** 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 to459.558, 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.40 **NAC 459.556 is hereby amended to read as follows:**

NAC 459.556 Administrative controls: Minimum exposure techniques. (NRS 459.201) Procedures and auxiliary equipment designed to minimize exposure to the patient and personnel commensurate with obtaining the needed diagnostic information must be utilized, including the following:

1. The speed of film or screen and film combinations must be the fastest speed consistent with the diagnostic objective of the examination;

2. The radiation exposure to the patient must be the minimum exposure required to produce images of good diagnostic quality; and

3. Portable or mobile equipment may be used only for examinations where it is impractical to transfer the patient to a stationary radiographic installation***, except as in number 5.***

4. Portable or mobile equipment may be used only for the purpose intended by the manufacturer, except as in number 5.

5. Portable or mobile equipment may be used in lieu of stationary equipment for up to a period of three calendar months while the facility is awaiting delivery of new stationary equipment or repair of the registered stationary equipment.

a) The portable or mobile equipment must be registered appropriately and the yearly fee paid;

b) The registrant must inform the Division of the use of the portable or mobile equipment as to when it was installed and the expected duration within the three calendar month duration.

(c) No extension of the three calendar months will be granted, unless, the registrant can demonstrate justifiable delay, through submittal of a delayed delivery or repair document, sent 10 days prior to the expiration of the original authorization for 3 months, for consideration of extension by the Division.

Sec.41 **NAC 459.564 is hereby amended to read as follows:**

NAC 459.564 Diagnostic X-ray systems. (NRS 459.201) In addition to other requirements of NAC 459.400 to 459.624, inclusive, all diagnostic X-ray systems must meet the following requirements:

1. The control panel containing the main power switch must bear the warning statement, legible and accessible to view: "WARNING: This X-ray unit may be dangerous to patient and operator unless safe exposure factors and operating instructions are observed."

2. On battery-powered generators, visual means must be provided on the control panel to indicate whether the battery is in a state of charge adequate for proper operation.

3. The leakage radiation from the diagnostic source assembly measured at a distance of 1 meter in any direction from the source must not exceed 100 milliroentgens in 1 hour when the X-ray tube is operated at its leakage technique factors. Compliance will be determined by measurements averaged over an area of 100 square centimeters with no linear dimension greater than 20 centimeters.

4. The radiation emitted by a component other than the diagnostic source assembly must not exceed 2 milliroentgens in 1 hour at 5 centimeters from any accessible surface of the component when it is operated in an assembled X-ray system under any conditions for which it was designed. Compliance will be determined by measurements averaged over an area of 100 square centimeters with no linear dimension greater than 20 centimeters.

5. The requisites for quality of the beam ***are compliant with 21 CFR Section 1020.30 (m) as pertaining to Beam Quality as presented:***

~~[(a) The half-value layer of the useful beam for a given X-ray tube potential must not be less than the values shown in Table I. If it is necessary to determine the half-value layer at X-ray tube potential which is not listed in Table I, linear interpolation or extrapolation may be made.~~

~~TABLE I~~

Design operating range (Kilovolts peak)	Measured potential (Kilovolts peak)	Half-value layer (Milli-meters of aluminum)
Below	30	0.3
	40	0.4
	49	0.5
50 to 70	50	1.2
	60	1.3
	70	1.5
Above 70	71	2.1
	80	2.3
	90	2.5
	100	2.7
	110	3.0
	120	3.2
	130	3.5
	140	3.8
	150	4.1

(b) The half-value layer criteria will have been met if it can be demonstrated that the aluminum equivalent of the total filtration in the primary beam is not less than that shown in Table II.

TABLE II

Filtration Required vs. Operating Voltage

Operating Voltage (kVp)	Total Filtration (inherent plus added) (millimeters aluminum equivalent)
Below 50	0.5 millimeters
50-70	1.5 millimeters
Above 70	2.5 millimeters

(c) Beryllium window tubes must have a minimum of 0.5 mm aluminum equivalent filtration permanently mounted in the useful beam.

(d) For capacitor energy storage equipment, compliance will be determined with the maximum quantity of charge per exposure.

~~(e) The required minimal aluminum equivalent filtration must include the filtration contributed by all materials which are always present between the focal spot of the tube and the patient, for example, a tabletop when the tube is mounted under the table and inherent filtration of the tube.]~~

Beam quality:

1)Half-value layer (HVL): The HVL of the useful beam for a given x-ray tube potential shall not be less than the appropriate value shown in table 1 in paragraph (m)(1) of this section under the heading "Specified Dental Systems," for any dental x-ray system designed for use with intraoral image receptors and manufactured after December 1, 1980; under the heading "I--Other X-Ray Systems," for any dental x-ray system designed for use with intraoral image receptors and manufactured before December 1, 1980, and all other x-ray systems subject to this section and manufactured before June 10, 2006; and under the heading "II--Other X-Ray Systems," for all x-ray systems, except dental x-ray systems designed for use with intraoral image receptors, subject to this section and manufactured on or after June 10, 2006. If it is necessary to determine such HVL at an x-ray tube potential which is not listed in table 1 in paragraph (m)(1) of this section, linear interpolation or extrapolation may be made. Positive means2shall be provided to ensure that at least the minimum filtration needed to achieve the above beam quality requirements is in the useful beam during each exposure. Table 1 follows:

Table 1

X-Ray Tube Voltage(kilovolt peak)		*Minimum HVL(mm of aluminum)*		
Designed Operating Range	*Measured Operating Potential*	*Specified Dental Systems[1]*	*I--Other X-Ray Systems[2]*	*II--Other X-Ray Systems[3]*
Below 51	*30*	*1.5*	*0.3*	*0.3*
	40	*1.5*	*0.4*	*0.4*
	50	*1.5*	*0.5*	*0.5*
51 to 70	*51*	*1.5*	*1.2*	*1.3*
	60	*1.5*	*1.3*	*1.5*
	70	*1.5*	*1.5*	*1.8*
Above 70	*71*	*2.1*	*2.1*	*2.5*
	80	*2.3*	*2.3*	*2.9*
	90	*2.5*	*2.5*	*3.2*
	100	*2.7*	*2.7*	*3.6*
	110	*3.0*	*3.0*	*3.9*
	120	*3.2*	*3.2*	*4.3*
	130	*3.5*	*3.5*	*4.7*
	140	*3.8*	*3.8*	*5.0*
	150	*4.1*	*4.1*	*5.4*

[1]Dental x-ray systems designed for use with intraoral image receptors and manufactured after December 1, 1980.

[2]Dental x-ray systems designed for use with intraoral image receptors and manufactured before or on December 1, 1980, and all other x-ray systems subject to this section and manufactured before June 10, 2006.

[3]All x-ray systems, except dental x-ray systems designed for use with intraoral image receptors, subject to this section and manufactured on or after June 10, 2006.

6. Where two or more radiographic tubes are controlled by one exposure switch, the tube or tubes which have been selected must be clearly indicated before initiation of the exposure. This indication must be on the X-ray control.

7. The tube housing assembly supports must be adjusted so that the tube housing assembly will remain stable during an exposure unless the tube housing movement is a designed function of the X-ray system.

8. The technique factors to be used during an exposure must be indicated before the exposure begins. If automatic exposure controls are used, the technique factors which are set before the exposure must be indicated. On equipment having fixed technique factors, this requirement may be met by permanent markings. Indication of technique factors must be visible from the operator's position except in the case of spot films made by the fluoroscopist.

Sec. 37 **NAC 459.574 is hereby amended to read as follows:**

NAC 459.574 Fluoroscopic X-ray systems: Indication of potential and current; source-skin distance; exceptions for fluoroscopy imaging system. (NRS 459.030, 459.201)

1. During fluoroscopy and cinefluorography, X-ray tube potential and current must be continuously indicated.

2. Except as otherwise provided in subsection 3, the source to skin distance must not be less than:

(a) Thirty-eight centimeters on stationary fluoroscopes installed after February 28, 1980;

(b) Thirty-five and five-tenths centimeters on stationary fluoroscopes which are in operation before February 28, 1980;

(c) Thirty centimeters on all mobile fluoroscopes; and

(d) Twenty centimeters for image intensified fluoroscopes used for specific surgical application. The users' operating manual must provide precautionary measures to be followed during the use of this device.

3. A fluoroscopy imaging system, including a small format type and miniature C-arm type, used to perform low power, X-ray image intensified fluoroscopy on extremities must:

(a) Be operated only by a ~~[licensed practitioner of the healing arts]~~ ***licensed physician, as defined by the Board of Medical Examiners, the State Board of Osteopathic Medicine, the Board of Dental Examiners of Nevada, the State Board of Podiatry, the Chiropractic Physicians' Board of Nevada, State Board of Oriental Medicine, the Board of Homeopathic Medical Examiners or the Nevada State Board of Veterinary Medical Examiners, or under the direct and present supervision of such a physician.***

(b) Possess a positive, nonremovable means to ensure a source-skin distance during operation of not less than 9 centimeters, unless a different distance is approved by the Food and Drug Administration.

(c) Be clearly labeled as for use only on extremities.

(d) Bear a certification label that includes:

(1) The statement "This product is in conformity with the performance standards for diagnostic X-ray systems and their major components set forth in 21 C.F.R. § 1020"; and

(2) If the Food and Drug Administration grants a variance from any performance standards for diagnostic X-ray systems and their major components set forth in 21 C.F.R. § 1020, a

statement of the variance and the identification number assigned to the variance by the Food and Drug Administration.

(e) Include an operating manual that contains:

(1) Any special instructions that may be necessary because of the unique features of the system, including, without limitation, special instructions concerning exposure rates, safety procedures and precautions; and

(2) Recommended machine settings for representative sample fluoroscopic examinations for which the system is designed, including data on skin and tabletop exposures resulting from these settings.

Sec.42 **NAC 459.580 is hereby amended to read as follows:**

NAC 459.580 Intraoral dental radiographic systems. (NRS 459.201)

1. In addition to the provisions of NAC 459.552 to 459.558, inclusive, and 459.564, these requirements apply to X-ray equipment and associated facilities used for dental radiography. The criteria for extraoral dental radiographic systems are covered in NAC 459.616 to 459.624, inclusive. ***Intraoral dental machines are restricted to intraoral dental use only.***

2. X-ray systems designed for use with an intraoral image receptor must be provided with means to limit source-to-skin distance of not less than 18 centimeters.

3. Radiographic systems which are designed for use with an intraoral image receptor must be provided with means to limit the X-ray beam so that:

(a) If the minimum source-to-skin distance is 18 centimeters or more, the X-ray field at the minimum source-to-skin distance is containable in a circle having a diameter of no more than 7 centimeters; and

(b) If the minimum source-to-skin distance is less than 18 centimeters, the X-ray field at the minimum source-to-skin distance is containable in a circle having a diameter of no more than 6 centimeters.

4. A means must be provided to terminate the exposure at a preset time interval, a preset product of current and time, a preset number of pulses, or a preset radiation exposure to the image receptor. In addition:

(a) Termination of exposure must cause automatic resetting of the timer to its initial setting or to zero; and

(b) It must not be possible to make an exposure when the timer is set to a zero or off position if either position is provided.

5. When four timer tests taken at identical timer settings equal 0.5 seconds or less, the average time period (T) must be greater than or equal to five times the difference between the maximum period (T max) and the minimum period (T min) in accordance with the formula: T 5 (T max-T min).

6. Deviation of measured technique factors from indicated values of kVp and exposure time must not exceed the limits specified for that system by its manufacturer. In the absence of the manufacturer's specifications, the deviation must not exceed 10 percent of the indicated value for kVp and 20 percent for exposure. All timers must be accurate to within ±20 percent of the selected value.

7. A control must be incorporated into each X-ray system so that an exposure can be terminated at any time, except for exposures of one-half second or less. The control switch must be of the dead-man type.

8. Each X-ray control must be located to meet the following criteria:

(a) Each installation must be provided with a protective barrier for the operator or must be so arranged that the operator can stand at least 6 feet from the patient and well away from the useful beam; and

(b) The X-ray control must provide visual indication observable at or from the operator's protected position whenever X rays are produced. In addition, a signal audible to the operator must indicate that the exposure has terminated.

9. The exposure produced must be reproducible to within the following criteria: When all technique factors are held constant, the coefficient of variation must not exceed 0.10. This requirement is met if, when four exposures at identical technique factors are made, the value of the average exposure (E) is greater than or equal to five times the difference between the maximum exposure (E max) and the minimum exposure (E min) in accordance with the formula: E 5 (E max-E min).

10. Patient and film holding devices must be used when the techniques permit.

11. Neither the tube housing nor the position indicating device may be handheld during an exposure.

12. The X-ray system must be arranged and operated in such a manner that the useful beam at the patient's skin does not exceed the dimensions specified in subsection 3.

13. Dental fluoroscopy without image intensification must not be used.

14. Each patient undergoing dental radiography must be draped with a protective apron of not less than 0.25 millimeters lead-equivalent to cover the gonadal area.

15. Dental X-ray machines with a nominal fixed kVp of less than 50 kVp must not be used to make diagnostic dental radiographs of humans.

Sec.43 **NAC 459.592 is hereby amended to read as follows:**

NAC 459.592 Therapeutic X-ray systems: Surveys; calibration; operating procedures. (NRS 459.201)

1. All new facilities and existing facilities not previously surveyed must have a radiation protection survey made by, or under the direction of, a qualified expert. This survey must also be done after any change in the facility which might produce a radiation hazard. The expert shall report his or her findings, in writing, to the person in charge of the facility and a copy of the report must be transmitted by the registrant to the Division within 30 days.

2. The radiation output of each therapeutic ~~[X-ray machine]~~ ***radiation producing machine*** must be calibrated by, or under the direction of, a qualified expert who is physically present at the facility during the calibration procedure. The calibration must be repeated after any change in, or replacement of, components of the X-ray generating equipment which could cause a change in X-ray output. Calibration of the therapy beam must be performed with a measuring instrument the calibration of which is directly traceable to national standards of exposure or absorbed dose and which has been calibrated within the preceding year. Records of the calibrations must be provided to and maintained by the registrant. In addition:

(a) Each therapeutic ~~[X-ray machine]~~ ***radiation producing machine*** must have the calibrations repeated at time intervals not exceeding 1 year. The calibration must include at least the following determinations:

(1) The accurate determination of the air dose rate or the dose rate in a suitable phantom, as appropriate, for a sufficient number of operating parameters for each effective energy to permit the determination of the dose received by the patient;

(2) Verification that the equipment is operating in accordance with the design specifications concerning the congruence between the radiation field and light localizer, when a localizer is used, and for beam flatness and symmetry at the specified depths;

(3) The effective energy, for example, half-value layer when appropriate, for every combination of kVp and filter used for radiation therapy;

(4) The uniformity of the radiation field and its dependence upon the direction of the useful beam; and

(5) The calibration determinations must be provided in sufficient detail so that the absorbed dose in rads to tissue adjacent to, as well as in the useful beam, may be calculated to within ±5 percent of the intended absorbed dose.

(b) Therapeutic X-ray systems capable of operation at greater than 150 kVp must, in addition to the annual calibration required in paragraph (a) have spot checks performed which meet the following criteria:

(1) A spot check must be made at least monthly or after 50 operating hours, whichever is shorter, and must include carefully selected representative or indicative measurements which will demonstrate the consistency of relevant machine operating characteristics or the lack of such characteristics.

(2) The spot-check methods must be in writing and have been designed by a qualified expert. Spot checks must include verification of continued congruency between the radiation field and localizing device where an optical field illuminator is used.

(3) Spot checks which are erratic or inconsistent with calibration data must be investigated promptly.

(4) For machines in which beam quality may vary significantly, spot checks must include beam quality checks.

(5) Whenever a spot check indicates a significant change, as specified in the qualified expert's spot check design, in the operating characteristics of a machine, the machine must be recalibrated as required in paragraph (a).

(6) A log must be kept of all spot-check measurements.

(c) In the therapeutic application of X-ray equipment constructed with beryllium or other low-filtration windows, the registrant must ensure that the unfiltered radiation reaches only the part intended and that the useful beam port is blocked at all times except when actually being used.

(d) Therapeutic ~~[X-ray machine]~~ ***radiation producing machines*** must not be left unattended unless the locking device, required by paragraph (e) of subsection 4 of NAC 459.588, is set to prevent activation of the useful beam.

(e) Except as provided in paragraph (f) of subsection 4 of NAC 459.554, no person other than the patient may be in the treatment room during exposures unless he or she is protected by a barrier sufficient to meet the requirements of NAC 459.325, and no person other than the patient may be in the treatment room when the kVp exceeds 150 during exposures except in emergency situations.

(f) The tube housing assembly must not be held by anyone during exposures.

(g) When a patient must be held in position for radiation therapy, mechanical restraining devices must be used.

Sec. 44 **NAC 459.5924 is hereby amended to read as follows:**

NAC 459.5924 Therapeutic x-ray systems: Requirements for radiation safety officers. (NRS 459.201)

1. A registrant for any therapeutic x-ray system shall require a radiation safety officer to:

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

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

(c) Be certified by:

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

(2) The American Board of Radiology in Diagnostic Radiologic Physics, Therapeutic Radiological Physics or Medical Nuclear Physics;

(3) The American Board of Nuclear Medicine;

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

(5) The American Board of Medical Physics; or

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

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

(2) Thirty hours of radiation protection;

(3) Twenty hours of mathematics pertaining to the use and measurement of radiation;

(4) Twenty hours of radiation biology;

(5) Thirty hours of medical therapy training; and

(6) One year of full-time experience in radiation safety at a medical institution under the supervision of a radiation safety officer.

2. A radiation safety officer shall:

(a) Implement a radiation safety program in the facility;

(b) Ensure that radiation safety activities are performed in accordance with approved procedures and regulatory requirements in the daily operation of a therapeutic X-ray system;

(c) Promptly investigate and implement corrective actions when:

(1) An incident which compromises safety occurs;

(2) A reportable event occurs; or

(3) An event occurs which deviates from approved radiation safety practices;

(d) Prepare a written report of any investigation conducted pursuant to paragraph (c) and the corrective action taken;

(e) Carry out written policies and procedures for:

(1) The safe use of a therapeutic~~[X-ray]~~ ***radiation producing machine*** system;

(2) The performance of radiation surveys as necessary;

(3) The performance of checks on survey instruments and other safety equipment; and

(4) The training of personnel who frequent or work in areas where radiation is present;

(5)~~[Misadministrations]~~ ***Medical events.***

(f) Keep on file:

(1) A copy of all records and reports required by the Division;

(2) A copy of NAC 459.010 to 459.950, inclusive;

(3) A copy of each registration correspondence with the Division; and

(4) The written policies and procedures required by this section; ~~[and]~~

(5)~~[Misadministrations]~~ ***Medical events; and***

(g) Review the occupational radiation exposure of all personnel working with ~~[X-ray]~~ ***radiation producing machine*** systems at least once every 3 months.

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

4. The registrant shall retain all records of:

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

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

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

6. As used in this section reports and notifications of medical events are as follows:

(a). A registrant shall report any event resulting from intervention of a patient or human research subject in which the administration of therapeutic radiation producing machine radiation results, or will result in, unintended permanent functional damage to an organ or a physiological system as determined by a physician.

(b).Other than events that result from intervention by a patient or human research subject, a registrant shall report any event in which the administration of a therapeutic radiation producing machine therapy dose:

(1) Involves the wrong patient, wrong treatment modality, or wrong treatment site; or

(2) The calculated weekly administered dose differs from the weekly prescribed dose by 'more than thirty percent (30%); or

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

(c). The registrant shall notify the Agency by telephone no later than the next calendar day after the discovery of a medical event.

(d). The registrant shall submit a written report to the Agency within fifteen (15) days after the discovery of a medical event. The written report must include:

(1) The registrant's name;

(2) The name of the prescribing physician;

(3) A brief description of the event;

(4) Why the event occurred;

(5) The effect, if any, on the individuals(s) who received the administration;

(6) Actions, if any, that have been taken, or are planned, to prevent recurrence;

(7) Certification that the registrant notified the individual (or the individual's responsible relative or guardian), and if not, why not.

(e). The report shall not contain the individual's name or any other information that could lead to the identification of the individual.

(f). The registrant shall provide notification of the event to the referring physician and also notify the individual who is the subject of the medical event no later than twenty-four (24) hours after its discovery, unless the referring physician personally informs the registrant either that he or she will inform the individual or that, based on medical judgment, telling the individual would be harmful. The registrant is not required to notify the individual without first consulting the referring physician. If the referring physician or the affected individual cannot be reached within twenty four (24) hours, the registrant shall notify the individual as soon as possible thereafter. The registrant may not delay any appropriate medical care for the individual, including any necessary remedial care as a result of the medical event, because of any delay in notification. To meet the requirements of this paragraph, the notification of the individual who is the subject of the medical event may be made instead to that individual's

responsible relative or guardian. If a verbal notification is made, the registrant shall inform the individual, or appropriate responsible relative or guardian, that a written description of the event can be obtained from the registrant upon request. The registrant shall provide such a written description if requested.
(g). Aside from the notification requirement, nothing in this section affects any rights or duties of registrants and physicians in relation to each other, to individuals affected by the medical event, or to that individual's responsible relatives or guardians.
(h). The registrant shall retain a record of a medical event. A copy of the record required shall be provided to the referring physician if other than the registrant within fifteen (15) days after discovery of the misadministration.
(i). A registrant shall retain a record of medical events reported for three (3) years. The record must contain the following:
(1). The registrant's name and the names of the individuals Involved;
(2) The social security number or other identification number, if one has been assigned, of the individual who is the subject of the medical event
(3). A brief description of the event; why it occurred; the effect, if any, on the individual;
(4) The actions, if any, taken or planned to prevent recurrence; and
(5). Whether the registrant notified the individual (or the individual's responsible relative or guardian) and, if not, whether such failure to notify was based on guidance from the referring physician.

Sec.45 **NAC 459.5926 is hereby amended to read as follows:**
NAC 459.5926 Therapeutic X-ray systems: Requirements for use; posting of certain procedures; duties of registrants. (NRS 459.201)

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

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

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

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

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

6. A registrant shall:

(a) Notify the radiation safety officer specified in NAC 459.5924, or the officer's designee, and an authorized user as soon as practicable, if a patient or human research subject has a medical emergency ~~[and]~~ ***or*** dies;

(b) Allow a person in the treatment room during treatment only after obtaining the approval of the authorized user, the radiation safety officer specified in NAC 459.5924 or the authorized medical physicist for electronic brachytherapy;

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

(d) Develop, implement and maintain written procedures for responding to a situation in which an operator is unable to complete the treatment in compliance with the written directive. The procedures must include, without limitation:

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

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

(3) The names and telephone numbers of the authorized users, the authorized medical physicist for electronic brachytherapy and the radiation safety officer specified in NAC 459.5924 who must be contacted if the system operates abnormally.

Sec.46 **NAC 459.610 is hereby amended to read as follows:**

NAC 459.610 X-ray and electron therapy installations: Surveys; operating procedure; calibration. (NRS 459.201)

1. All new facilities and existing facilities not previously surveyed must have a survey of radiation protection made by, or under the direction of, a qualified expert. This survey must also be done after any change in the facility or equipment which might cause a significant increase in radiation hazard.

2. The expert must report his or her findings in writing to the person in charge of the facility, and a copy of the report must be transmitted by the registrant to the Division.

3. The survey and report must indicate all instances where, in the opinion of the qualified expert, the installation is in violation of any applicable regulation for protection against radiation and must cite the sections violated.

4. No person other than the patient may be in the treatment room during treatment. When a patient must be held in position for radiation therapy, mechanical supporting or restraining devices must be used.

5. The output of each therapeutic ~~[X-ray machine]~~ ***radiation producing machine*** must be calibrated by a qualified expert, before the machine is first used for medical purposes. Calibrations must be repeated at least once every 12 months and after any change which might significantly increase radiation hazards. Records of calibrations must be provided to and maintained by the registrant. The calibration must include at least the following determinations:

(a) Verification that the equipment is operating in compliance with the design specifications concerning the light localizer, the side light and backpointer alignment with the isocenter, when applicable, variation in the axis of rotation for the table, gantry and jaw system and beam flatness and symmetry at the specified depths.

(b) The exposure rate or dose rate for the range and field sizes used and for each effective energy and for each treatment distance used for radiation therapy.

(c) The effective energy, for example, half-value layer when appropriate, for every combination of kVp and filter used for radiation therapy.

(d) The congruence between the radiation field and the field indicated by the localizing device when localizing devices are used for radiation therapy.

(e) The uniformity of the radiation field and its dependence upon the direction of the useful beam.

(f) The calibration determinations must be provided in sufficient detail so that the absorbed dose in rads to tissue adjacent to, as well as in the useful beam, may be calculated to within ±5 percent of the intended absorbed dose.

Sec.47 **NAC 459.614 is hereby amended to read as follows:**

NAC 459.614 Veterinary medicine radiographic installations. (NRS 459.201)

1. The protective tube housing must be of the diagnostic type.

2. Diaphragms or cones must be provided for collimating the useful beam to the area of clinical interest and must provide the same degree of protection as is required of the housing.

3. The total filtration permanently in the useful beam must not be less than 0.5 millimeters aluminum equivalent for machines operating up to 50 kVp, 1.5 millimeters aluminum equivalent for machines operating between 50-70 kVp, and 2.5 millimeters aluminum equivalent for machines operating above 70 kVp.

4. A device must be provided to terminate the exposure after a preset time or exposure.

5. A dead-man type of exposure switch must be provided together with an electrical cord of sufficient length so that the operator can stand out of the useful beam and at least 6 feet from the animal during all X-ray exposures.

6. All wall, ceiling and floor areas must be equivalent to or provided with applicable protective barriers as required in NAC 459.325, 459.331 and 459.335.

7. The operator shall stand well away from the useful beam and the animal during radiographic exposures.

8. No person other than the operator may be in the X-ray room while exposures are being made unless the person's assistance is required.

9. When an animal must be held in position during radiography, mechanical supporting or restraining devices should be used. If the animal must be held by a person, the person must be protected with appropriate shielding devices, such as protective gloves and apron, and he or she must be positioned so that no part of his or her body will be struck by the useful beam. The exposure of any person used for this purpose must be monitored and permanently recorded.

10. Accuracy of the machine:

- ***a. All dedicated veterinary machines must be accurate in the kVp within 10% of the set kVp when measured, unless stated otherwise in the manufacturer's technical specification manual.***
- ***b. All dedicated veterinary machine must be accurate in the timer within 10% of the set time when measured, unless stated otherwise in the manufacturer's technical specification manual.***
- ***c. All dedicated veterinary machines, when equipped from the manufacturer with an adjustable collimator with indication in inches or centimeters of the field size, such measurement must be within 2% of the SID when measured, unless otherwise specified in the manufacturer's technical specification manual. If not so equipped with a numerical field size indication, the field must be so aligned that it closes on center in the X and the Y axis and the adjustable field size is operable.***
- ***d. Any machine that is or previously was used as medical and was FDA certified under 21 CFR for human use may be used for veterinary purposes, however, these machines are held to the medical standard for compliance.***

Sec.48 **NAC 459.618 is hereby amended to read as follows:**

NAC 459.618 General purpose***, human use certified,*** X-ray systems: Stationary and mobile. (NRS 459.201)

1. A means must be provided for stepless adjustment of the size of the X-ray field.

2. A means must be provided for visually defining the perimeter of the X-ray field. The total misalignment of the edges of the visually defined field with the respective edges of the X-ray field along either the length or width of the visually defined field must not exceed 2 percent of the distance from the source to the center of the visually defined field when the surface upon which it appears is perpendicular to the axis of the X-ray beam.

3. The Division may grant an exemption from subsections 1 and 2 for an uncertified X-ray system if the registrant makes a written application for the exemption and in his or her application demonstrates that:

(a) It is impractical to comply with subsections 1 and 2; and

(b) The purpose of NAC 459.400 to 459.624, inclusive, will be met by other means.

4. All stationary general purpose X-ray systems must meet the following additional requirements:

(a) The beam-limiting device must numerically indicate the field size in the plane of the image receptor to which it is adjusted;

(b) Indication of field size dimensions and source-image receptor distances must be specified in inches or centimeters, or both, and must be such that aperture adjustments result in X-ray field dimensions in the plane of the image receptor which correspond to those of the image receptor to within 2 percent of the source-image receptor distance when the beam axis is perpendicular to the plane of the image receptor; and

(c) A means must be provided to indicate when the axis of the X-ray beam is perpendicular to the plane of the image receptor, to align the center X-ray field with respect to the center of the image receptor to within 2 percent of the source-image receptor distance, and to indicate the source-image receptor distance to within 2 percent.

5. Radiographic equipment designed for only one image receptor size at a fixed source-image receptor distance must be provided with means to limit the field at the plane of the image receptor to dimensions no greater than those of the image receptor, and to align the center of the X-ray field with the center of the image receptor to within 2 percent of the source-image receptor distance.

6. All radiographic equipment is to be used for the purpose as designed for by the manufacturer.

7. All radiographic equipment is to be maintained as designed by the manufacturer unless there is documented change by the manufacturer or labeled appropriately to meet provisions of 21CFR part 1010, subpart A, Section 1010.2 and 1020.

Sec.49 **NAC 459.620 is hereby amended to read as follows:**

NAC 459.620 Other radiographic systems: Special purpose systems. (NRS 459.201) For special purpose X-ray systems:

1. A means must be provided to limit the X-ray field in the plane of the image receptor so that the field ~~[does not exceed each dimension of the image receptor by more than 2 percent of the source-image receptor distance]~~ ***is within 2 percent of the source-image receptor distance in each dimension of the field,*** when the axis of the X-ray beam is perpendicular to the plane of the image receptor.

2. A means must be provided to align the center of the X-ray field with the center of the image receptor to within 2 percent of the source-image receptor distance.

3. Subsections 1 and 2 may be met with a system that meets the requirements for a general purpose X-ray system as specified in NAC 459.618, or, when alignment means are also provided, may be met with either:

(a) An assortment of removable, fixed-aperture, beam-limiting devices sufficient to meet the requirement for each combination of image receptor size and source-image receptor distance for which the unit is designed with each such device having clear and permanent markings to indicate the image receptor size and source-image receptor distance for which it is designed; or

(b) A beam-limiting device having multiple fixed apertures sufficient to meet the requirement for each combination of image receptor size and source-image receptor distance for which the unit is designed. Permanent, clearly legible markings must indicate the image receptor size and source-image receptor distance for which each aperture is designed and indicate which aperture is in position for use.

Sec.50 **NAC 459.7033 is hereby amended to read as follows:**

NAC 459.7033 "X-ray industrial radiography" defined. (NRS 459.030) "X-ray industrial radiography" means the examination of the macroscopic structure of materials by nondestructive methods utilizing X-ray sources of radiation***,including but not limited to personnel security evaluations for detection of contraband by use of dedicated machines, designed for that purpose.***

Sec. 51 **NAC 459.724 is hereby amended to read as follows:**

NAC 459.724 Safety requirements for operators of X-ray systems. (NRS 459.030, 459.201)

1. A registrant shall not permit any person to operate an X-ray system to conduct X-ray industrial radiography***, with the exception of security scanning machines including personnel scanning machines defined in NAC 459.7033 for industrial use and NAC 459.684 for baggage type machines,*** unless, at all times during radiographic operations, the person wears a film badge or a thermoluminescence dosimeter and, if the X-ray industrial radiography takes place at a temporary job site or in a room or building that does not meet the requirements of NAC 459.335, a direct reading pocket dosimeter.

Personnel security scanning machine and baggage scanning machine operation require compliance with NAC 459.337.

2. Direct reading pocket dosimeters must have a range from zero to 200 millirems (2 millisieverts) and be recharged at the start of each shift. Each film badge or thermoluminescence dosimeter must be assigned to and worn by only one person. A film badge must not be replaced less often than once a month. A thermoluminescence dosimeter must not be replaced less often than once every 3 months.

3. Direct reading pocket dosimeters must be read and exposures recorded daily. A person's film badge or thermoluminescence dosimeter must be immediately processed if his or her pocket dosimeter is discharged beyond its range. Reports received from the film badge or thermoluminescence dosimeter processor and records of the pocket dosimeter readings must be maintained for inspection by the Division for not less than 3 years after the records are made.

4. Each direct reading pocket dosimeter must be checked at periods not to exceed 1 year for response to radiation. To be acceptable, a dosimeter must read within plus or minus 20 percent of the true radiation exposure.

5. If the ion-chamber pocket dosimeter of a person is found to be off scale, or if the electronic personal dosimeter of a person reads greater than 200 millirems (2 millisieverts), and the possibility of radiation exposure cannot be ruled out as the cause:

(a) The film badge or thermoluminescence dosimeter of that person must be sent for processing within 24 hours; and

(b) The person shall not resume work with sources of radiation until a determination of his or her radiation exposure has been made.

6. For the purposes of this section, a person performing maintenance on an X-ray system shall be deemed to be operating the system if the X-ray beam is on at any time during the performance of the maintenance.

Sec. 52 **NAC 459.788 is hereby amended to read as following:**

NAC 459.788 Inspections: Generally; presence of representatives of licensees, registrants and employees. (NRS 459.201)

1. Each licensee or registrant shall permit the Division, at all reasonable times, an opportunity to inspect materials, machines, activities, facilities, premises and records pursuant to NAC 459.010 to 459.794, inclusive.

(g) During an inspection, division inspectors may consult privately with workers, as specified in NAC 459.790. The licensee or registrant may accompany the Division's inspectors during other phases of an inspection.

(h) A licensee or registrant may be required to energize any machine involved in the inspection for the inspector. This may be accomplished by an employee of the licensee or registrant or by the Division inspector with the consent of the licensee or registrant. Should it be a medical machine, no patient will be involved if the inspector operates the machine.

~~[3]~~ ***4.*** If, at the time of an inspection, a person has been authorized by the workers to represent them during the inspection, the licensee or registrant must notify the inspectors of the authorization and give the workers' representative an opportunity to accompany the inspectors during the inspection of physical working conditions.

~~[4]~~ ***5.*** Each worker's representative must be routinely engaged in work under control of the licensee or registrant and must have received instructions as specified in NAC 459.784.

~~[5]~~ ***6.*** Different representatives of licensees or registrants and workers may accompany the inspectors during different phases of an inspection if there is no resulting interference with the conduct of the inspection, but only one workers' representative at a time may accompany the inspectors.

~~[6]~~ ***7.*** With the approval of the licensee or registrant and the workers' representative, a person who is not routinely engaged in work under control of the licensee or registrant, for example, a consultant to the licensee or registrant or to the workers' representative, may be afforded the opportunity to accompany division inspectors during the inspection of physical working conditions.

~~[7]~~ ***8.*** Notwithstanding the other provisions of this section, division inspectors may refuse to permit accompaniment by any person who deliberately interferes with a fair and orderly inspection. With regard to any area containing proprietary information, the workers' representative for that area must be a person previously authorized by the licensee or registrant to enter that area.

NAC 459.276, NAC 459.278 and NAC 459.703 are hereby repealed.

TEXT OF REPEALED SECTIONS

Sec.53 **NAC 459.276 is hereby repealed:**

NAC 459.276 Specific licenses: Introduction of exempt concentrations of radioactive material into certain products or materials. (NRS 459.201)

1. In addition to the requirements set forth in NAC 459.238, a specific license authorizing the introduction of radioactive material into a product or material owned by or in the possession of the licensee or another to be transferred to persons exempt pursuant to NAC 459.184 will be issued if:

(a) The applicant submits a description of the product or material into which the radioactive material will be introduced, intended use of the radioactive material and the product or material into which it is introduced, method of introduction, initial concentration of the radioactive material in the product or material, control methods to ensure that no more than the specified concentration is introduced into the product or material, estimated time interval between introduction and transfer of the product or material, and estimated concentration of the radioactive material in the product or material at the time of transfer; and

(b) The applicant provides reasonable assurance that the concentrations of radioactive material at the time of transfer will not exceed the concentrations in NAC 459.186, that reconcentration of the radioactive material in concentrations exceeding those in NAC 459.186 is not likely, that use of lower concentrations is not feasible, and that the product or material is not likely to be incorporated in any food, beverage, cosmetic, drug or other commodity or product designed for ingestion or inhalation by, or application to, a human being.

2. Each person licensed under this section must file an annual report with the Division which identifies the type and quantity of each product or material into which radioactive material has been introduced during the reporting period; the name and address of the person who owned or possessed the product or material into which radioactive material has been introduced, at the time of introduction; the type and quantity of radionuclide introduced into each such product or material; and the initial concentrations of the radionuclide in the product or material at time of transfer of the radioactive material by the licensee. If no transfers of radioactive material have been made pursuant to this section during the reporting period, the report must so indicate. The report must cover the year ending June 30, and be filed with the Division within 30 days.

Sec.54 **NAC 459.278 is hereby repealed:**

NAC 459.278 Specific licenses: Distribution of radioactive material in exempt quantities. (NRS 459.201)

1. An application for a specific license to distribute radioactive material other than source or by-product material to persons exempted from NAC 459.010 to 459.794, inclusive, pursuant to NAC 459.184 will be approved if:

(a) The radioactive material is not contained in any food, beverage, cosmetic, drug or other commodity designed for ingestion or inhalation by, or application to, a human being;

(b) The radioactive material is in the form of processed chemical elements, compounds, mixtures, tissue samples, bioassay samples, counting standards, plated or encapsulated sources or similar substances, identified as radioactive and to be used for its radioactive properties, but is not incorporated into any manufactured or assembled commodity, product or device intended for commercial distribution; and

(c) The applicant submits copies of prototype labels and brochures and the Division approves the labels and brochures.

2. The license issued under subsection 1 is subject to the following conditions:

(a) No more than ten exempt quantities may be sold or transferred in any single transaction. An exempt quantity may be composed of fractional parts of one or more of the exempt quantity provided the sum of the fractions does not exceed unity.

(b) Each exempt quantity must be separately and individually packaged. No more than ten packaged exempt quantities may be contained in any outer package for transfer to persons exempt pursuant to NAC 459.184. The outer package must be such that the dose rate at the external surface of the package does not exceed 0.5 millirem per hour.

(c) The immediate container of each quantity or separately packaged fractional quantity of radioactive material must bear a durable, legible label which:

(1) Identifies the radionuclide and the quantity of radioactivity; and

(2) Bears the words "Radioactive Material."

(d) In addition to the labeling information required by paragraph (c) the label affixed to the immediate container or an accompanying brochure must:

(1) State that the contents are exempt from the Nuclear Regulatory Commission or agreement state requirements;

(2) Bear the words "Radioactive Material - Not for Human Use - Introduction into Foods, Beverages, Cosmetics, Drugs, Medicines or Products Manufactured for Commercial Distribution is Prohibited - Exempt Quantities Should not be Combined"; and

(3) Set forth appropriate radiation safety precautions and instructions relating to the handling, use, storage and disposal of the radioactive material.

3. Each person licensed under this section shall maintain records identifying, by name and address, each person to whom radioactive material is transferred for use under NAC 459.184 or the equivalent regulations of an agreement state, and stating the kinds and quantities of radioactive material transferred. An annual summary report stating the total quantity of each radionuclide transferred under the specific license must be filed with the Division. Each report must cover the year ending June 30, and be filed within 30 days. If no transfers of radioactive material have been made pursuant to this section during the reporting period, the report must so indicate.

4. The provisions of subsection 2 of NAC 459.262 apply to this section.

Sec.55 **NAC 459.703 is hereby repealed.**

NAC 459.703 "Temporary job site" defined. (NRS 459.030, 459.201) "Temporary job site" means any place where sources of X-ray radiation are present and X-ray industrial radiography is performed.