NEBRASKA DEPARTMENT OF HEALTH AND HUMAN SERVICES
NOTICE OF PUBLIC HEARING

December 13, 2019
10:00 a.m. Central Time
Nebraska State Office Building – Lower Level B
301 Centennial Mall South, Lincoln, Nebraska

The purpose of this hearing is to receive comments on proposed changes to Title 180, Chapter 15 of the Nebraska Administrative Code (NAC) – *Training and Experience Requirements for Use of Radiation Sources.* The chapter outlines the training and experience requirements for utilizing or servicing sources of radiation. The proposed changes modify the training requirements for persons installing or repairing radiation generating equipment; remove duplicative statutory language and unnecessary language from the regulations; and update formatting.

Authority for these regulations is found in Neb. Rev. Stat. § 81-3117(7).

Interested persons may attend the hearing and provide verbal or written comments or mail, fax or email written comments, no later than the day of the hearing to: DHHS Legal Services, PO Box 95026, Lincoln, NE 68509-5026, (402) 742-2382 or dhhs.regulations@nebraska.gov, respectively.

A copy of the proposed changes is available online at http://www.sos.ne.gov, or by contacting DHHS at the mailing address or email above, or by phone at (402) 471-8417. The fiscal impact statement for these proposed changes may be obtained at the office of the Secretary of State, Regulations Division, 1201 N Street, Suite 120, Lincoln, NE 68508, or by calling (402) 471-2385.

Auxiliary aids or reasonable accommodations needed to participate in a hearing can be requested by calling (402) 471-8417. Individuals with hearing impairments may call DHHS at (402) 471-9570 (voice and TDD) or the Nebraska Relay System at 711 or (800) 833-7352 TDD at least 2 weeks prior to the hearing.

FISCAL IMPACT STATEMENT

Agency: **Department of Health and Human Services**	
Title: 180	Prepared by: Julia Schmitt
Chapter: 15	Date prepared: 5/22/2019
Subject: Training and Experience Requirements for Use of Radiation Sources	Telephone: 402/471-0528

Type of Fiscal Impact:

	State Agency	Political Sub.	Regulated Public
No Fiscal Impact	(☒)	(☒)	(☒)
Increased Costs	(☐)	(☐)	(☐)
Decreased Costs	(☐)	(☐)	(☐)
Increased Revenue	(☐)	(☐)	(☐)
Decreased Revenue	(☐)	(☐)	(☐)
Indeterminable	(☐)	(☐)	(☐)

Provide an Estimated Cost & Description of Impact:

State Agency:

Political Subdivision:

Regulated Public:

If indeterminable, explain why:

PROPOSED REGULATION QUESTIONNAIRE

Title 180 NAC 15

1) Is the regulation essential to the health, safety, or welfare of Nebraskans?

Yes. The purpose of the regulations are to institute and maintain a program to permit development and utilization of sources of radiation for peaceful purposes consistent with the protection of occupational and public health and safety and the environment. The regulated entities are handling radioactive material or radiation generating machines. As such, it is important they have the necessary training and experience to use radiation safely.

2) Do the costs of the regulation outweigh the benefits? Provide specific data and reasoning.

Yes. Misuse of ionizing radiation can have catastrophic health consequences. The regulations provide safeguards that allow the benefits while minimizing risks.

Radioactive materials provide benefits to the public in a number of medical and industrial settings. Misuse of radioactive materials and ionizing radiation can be life-threatening and have catastrophic environmental consequences. The regulations provide safeguards that allow the benefits while minimizing risks. Without regulation by the state, individuals would be required to meet the same standards under federal licensure at significantly great cost to the licensees. As an Agreement State, the Annual Fees levied by Nebraska for licensure and regulation are <u>much less</u> than those levied by the U.S. Nuclear Regulatory Commission (NRC).
Examples:

Material Type	NRC	Nebraska
Medical Use	$11,100 – 18,500	$3,900
Panoramic Irradiator	$62,000	$11,500
Irradiator, self-shielded	$6,500	$2,600
Broad Scope (Educational or Medical)	$29,700	$18,000
Industrial Radiography	$10,600	$6,500

3) Does a process exist to measure the effectiveness of the regulation? If so, explain.

Yes. Licensees and registrants are inspected for compliance with the radiation safety regulations. The performance of the Office of Radiological Health is evaluated by the Nuclear Regulatory Commission during the Integrated Materials Performance Evaluation Program (IMPEP). Performance is assessed in the following areas: technical staffing and training; status of materials inspection program; technical quality of inspections; technical quality of licensing actions; technical quality of incident and allegation activities, and; compatibility of regulations.

4) Has a less restrictive alternative been considered?

The least restrictive alternative has been chosen. Because the Agreement requires that Nebraska's regulatory program be compatible with that of the NRC, rather than always identical, there are some areas of the regulations that we are allowed more flexibility in crafting regulations that more directly meet the needs of our licensees while still being protective. Each regulation of the NRC is assigned a compatibility designation. Compatibility A regulations are basic radiation protection standard or related definitions, signs, labels or terms necessary for a common understanding of radiation protection principles. The State regulations must be essentially identical to those of the NRC. Compatibility B regulations have significant direct trans-boundary implications. The State regulations must be essentially identical to those of the NRC. For Compatibility C regulations, the essential objectives must be adopted by the State to avoid conflicts, duplications or gaps. The manner in which the essential objectives are addressed need not be the same as NRC, provided the essential objectives are met. For any Compatibility C regulations, the least restrictive regulatory alternative has been chosen.

The training requirements for persons installing or repairing radiation generating equipment have been modified to make it easier for those individuals to demonstrate that they meet the requirements.

5) Was the regulation solely promulgated due a state statutory requirement? If so, provide citations.

Yes, Neb. Rev. Stat. § 71-3505(1) requires regulations. However, even if the statute were to be changed to "may", regulations would still be needed to ensure public safety and safe radiation use by the regulated entities.

6) Was the regulation promulgated as the result of a federal mandate? If so, include copies of the applicable federal statutes and regulations.

No. However, Section 274 of the Atomic Energy Act provides a statutory basis under which the U. S. Nuclear Regulatory Commission (NRC) relinquishes to the States portions of its regulatory authority to license and regulate byproduct materials (radioisotopes); source materials (uranium and thorium); and certain quantities of special nuclear materials to States that meet certain requirements. The mechanism for the transfer of NRC's authority to a State is an agreement signed by the Governor of the State and the Chairman of the Commission, in accordance with section 274b of the Act. The NRC relinquished their authority to the State of Nebraska in 1966 when Governor Morrison signed the Agreement with the NRC. The Agreement requires that Nebraska maintain a regulatory program that is adequate to protect public health and safety and the environment and that our regulations be compatible with those of the NRC. The NRC periodically reviews the program for adequacy and compatibility with that of the NRC. As an Agreement State, if the Nebraska Regulations for Control of Radiation are not found to be compatible, the NRC can terminate the Agreement and resume regulatory authority over radioactive materials within the State. Currently, there are 38 states that have agreements with the NRC with several more states in process.

PROPOSED REGULATION
POLICY PRE-REVIEW CHECKLIST

Agency: DHHS – Division of Public Health
Title, Chapter of Regulation: Title 180 NAC 15
Subject: Training and Experience Requirements for Use of Radiation Sources
Prepared by: Julia Schmitt
Telephone: 402-471-0528

A. Policy Changes and Impacts

1. What does the regulation do and whom does it impact? Provide a brief description of the proposed rule or regulation and its impacts on state agencies, political subdivisions, and regulated persons or entities.

   The regulations apply to persons using radiation sources. The training requirements for persons installing or repairing radiation generating equipment have been modified to make it easier for those individuals to demonstrate that they meet the requirements. In addition, the regulations remove any unnecessary language and any repeated statutory language from the regulations.

2. Describe changes being proposed to current policy and briefly provide rationale.

   The training requirements for persons installing or repairing radiation generating equipment have been modified to make it easier for those individuals to demonstrate that they have the required training. The regulations also remove any repeated statutory language from the regulations.

B. Why is the rule necessary? Explain and provide an identification of authorizing statute(s) or legislative bill(s).

1. Update of regulation (repeal of obsolete statutes, reflect current policy, editing or technical language changes, etc.)

   This update of regulations changes training requirements for persons installing or repairing radiation generating equipment. These changes will make it easier for individuals to demonstrative that they have met the requirements.

2. Annual changes – cost of living, hunting season schedules, etc.

   No.

3. Law was changed – federal ___ or state ___ [Cite authorizing statute(s) or legislative bill(s)]

   N/A

4. Extension of established policy or program, new initiatives or changes in policy (within statutory authority) No

5. Constituent initiated No

6. Financial needs – increases/decreases in fees No

7. Litigation requires changes in rules No

8. Addresses legal or constitutional concerns of Attorney General's office No

9. Implements federal or court mandate No

10. Other (explain)

C. <u>What happens if these rules are not adopted?</u>

Persons installing or repairing radiation generating equipment would still struggle to produce documentation that they meet the training requirements. In addition, unnecessary or redundant regulations would remain in place.

D. <u>Policy Checklist</u>

1. Is this an update or editorial change reflecting essentially no change in policy? Yes

2. Does the policy in the proposed regulation reflect legislative intent? Yes.

3. Is the policy proposed in the regulation a state mandate on local government? Yes Is it funded? Yes

4. Is the policy proposed in the regulation a federal mandate on local government? No Is it funded? N/A

E. <u>Fiscal Impact. In addition to completing the required Fiscal Impact Statement (a copy must be attached to this document), the agency must address the following:</u>

No fiscal impact.

1. Will the proposed regulation reduce, increase, or have no change in resources – funds, personnel or FTE? No change.

2. Have initial contacts been made with citizens or organizations that may be impacted by the proposed regulation? No, because the changes are primarily formatting and editorial. We will solicit public comment before a public hearing.

3. Does the proposed regulation impact another agency? No Explain the impact.

4. Will the proposed regulation reduce, increase, or have no change on reporting requirements of businesses?

   No change

5. What is the agency's best estimate of the additional or reduced spending? If there is none, please note. If receipt of federal funds is contingent upon approval of the proposed regulation, then indicate the amount and nature of the federal funds affected, and enclose laws or correspondence from federal officials substantiating the information.

   No change in spending.

6. Include a description of the impact that the proposed regulation will have on the number of state employees and how the agency intends to address proposed increases or decreases in FTE.

   No Impact.

F. Unique problems or issues and recommendations.

No known problems or issues.

G. Who is expected to be affected, or to oppose or support the proposed regulation? Explain what initial informal contacts have been made with organizations or citizens who may be affected by the regulation prior to the public hearing.

No known supporters or opponents.

DHHS will solicit public comment on the proposed regulations before the public hearing.

H. Are these proposed rules a likely candidate for negotiated rulemaking?

Explain. Has the process been completed? If so, explain how the issues were addressed.

No.

DHHS Division Director's Verification of Review

I have reviewed these proposals and verify that, at this stage of the regulation's development, these questions have been accurately addressed.

_____ _____

Bo Botelho
Interim Director, Division of Public Health
Department of Health and Human Services

Date

TITLE 180 CONTROL OF RADIATION

CHAPTER 15 TRAINING AND EXPERIENCE REQUIREMENTS FOR USE OF RADIATION SOURCES

001. SCOPE AND AUTHORITY. This chapter establishes the training and experience requirements of personnel utilizing or servicing sources of radiation addressed in 180 Nebraska Administrative Code (NAC) 2, 3, 5, 6, 8, 9, 12 and 20. It establishes the criteria which courses of instruction must possess prior to being approved by the Department. Title 180 is authorized by and implements the Nebraska Radiation Control Act, Nebraska Revised Statute (Neb. Rev. Stat.) §§ 71-3501 to 71-3520.

002. DEFINITIONS. The following definitions apply to 180 NAC 15.

002.01 EXPERIENCE. Active participation in events or activities, leading to accumulation of knowledge is experience.

002.02 FORMAL TRAINING. Training or education, including either didactic or clinical practicum or both, which has a specified objective, planned activities for students, and suitable methods for measuring student attainment, and which is offered, sponsored, or approved by an organization or institution which is able to meet or enforce these criteria is formal training.

003. RECENTNESS OF TRAINING. The training and experience specified in 180 NAC 15 must have been obtained within the seven years preceding the date of application or the individual must have related continuing education and experience since the required training and experience was completed.

004. MINIMUM QUALIFICATIONS. This section addresses the qualifications for a radiological medical physicist, a radiological health physicist, and a qualified expert.

004.01 RADIOLOGICAL MEDICAL PHYSICIST. A radiological medical physicist must:

(A) Be certified by the American Board of Radiology in therapeutic radiological physics, roentgen ray and gamma ray physics, x-ray and radium physics; or radiological physics; or the American Board of Medical Physics in radiation oncology physics or the Canadian College of Medical Physics. Certification must be in the specialty the individual will be clinically practicing; or

(B) Have a master's or doctor's degree in physics, medical physics, other physical science, engineering, applied mathematics, nuclear physics, biophysics, radiological physics, or health physics and has completed one year of full time training in medical physics and an additional year of full time work experience under the supervision of

a radiological medical physicist that meets the requirements of 180 NAC 15-004.01(A) at a medical institution. Full time training and full time work experience must be in the specialty the individual will be clinically practicing.

004.02 RADIOLOGICAL HEALTH PHYSICIST. A radiological health physicist must:

(A) Be certified by the American Board of Health Physics or the American Board of Radiology in therapeutic radiological physics, roentgen ray and gamma ray physics, x-ray and radium physics, or radiological physics, diagnostic radiologic physics; or the American Board of Medical Physics, or the Canadian College of Medical Physics;

(B) Have a master's or a doctor's degree in a physical or natural science or equivalent, biophysics, radiological physics or health physics, plus one year of full time experience in radiation protection and measurements; or

(C) Have a bachelor's degree in a physical or natural science or equivalent, plus three years of full time training and experience in radiation protection and measurements and a written statement from a radiological health physicist as defined in 180 NAC 15-004.02(A) or (B) that two years of training and experience in radiation protection and measurements, including knowledge and training in the field of radiation shielding, have been obtained under their supervision.

004.03 QUALIFIED EXPERT. A qualified expert must have:

(A) A bachelor's degree in a physical or natural science, and one year of experience in radiation protection and measurements; or

(B) A certificate or associate degree from an accredited radiological technology school and one year of experience in radiation protection and measurements.

005. TRAINING AND EXPERIENCE REQUIREMENTS FOR PERSONNEL FOR INSTITUTIONAL BROAD SCOPE TYPE LICENSE A, B, AND C LISTED IN 180 NAC 3-013. This section addresses the training and experience requirements of personnel using radioactive material under a broad scope license.

005.01 RADIATION SAFETY OFFICER. A radiation safety officer must have:

(A) A college degree at the bachelor level, in physical or biological sciences or in engineering plus four years work experience in health physics, radiological health or another field equivalent to the above fields; or

(B) A master's degree or equivalent graduate coursework in health physics or radiological health with two years of work experience in health physics or radiological health.

005.02 AUTHORIZED USER. An authorized user must have:

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

(B) 40 hours of formal instruction in:

(i) Radiation physics and instrumentation;

(ii) Radiation protection;

(iii) Mathematics pertaining to the use and measurement of radioactivity; and

(iv) Biological effects of radiation; and

(C) One-hundred and sixty hours experience in the safe handling of radioactive material.

006. PERSONNEL TRAINING AND EXPERIENCE REQUIREMENTS FOR LICENSEES IN AN EDUCATIONAL INSTITUTION OTHER THAN BROAD SCOPE LICENSES. This section addresses training and experience requirements for personnel using radioactive material at an educational institution that has a license other than broad scope license.

006.01 RADIATION SAFETY OFFICER, AUTHORIZED USER, OR BOTH. A radiation safety officer, authorized user, or both must:

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

(B) Have 40 hours of formal instruction in:

(i) Radiation physics and instrumentation;

(ii) Radiation protection;

(iii) Mathematics pertaining to the use and measurement of radioactivity; and

(iv) Biological effects of radiation; and

(C) Demonstrate an understanding of institution radiation safety policy and procedures and applicable parts of Title 180 or its equivalent.

007. TRAINING AND EXPERIENCE REQUIREMENTS FOR LABORATORY AND INDUSTRIAL USE OF RADIOACTIVE MATERIAL PERSONNEL. Personnel using radioactive material under laboratory or industrial licenses must meet the following requirements.

007.01 MILLICURIE QUANTITIES. For use of millicurie quantities, the radiation safety officer, authorized user, or both must:

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

(B) Have 40 hours of formal instruction in:

(i) Radiation physics and instrumentation;

(ii) Radiation protection;

(iii) Mathematics pertaining to the use and measurement of radioactivity; and

(iv) Biological effects of radiation; and

(C) Demonstrate an understanding of operating and emergency procedures and applicable parts of Title 180 or its equivalent.

007.02 MICROCURIE QUANTITIES. For use of microcurie quantities, the radiation safety officer, authorized user, or both must:

(A) Have 40 hours of formal instruction in:

(i) Radiation physics and instrumentation;

(ii) Radiation protection;

(iii) Mathematics pertaining to the use and measurement of radioactivity; and

(iv) Biological effects of radiation; and

(B) Demonstrate an understanding of operating and emergency procedures and applicable part of Title 180 or its equivalent.

008. PERSONNEL TRAINING AND EXPERIENCE REQUIREMENTS FOR LICENSES TO MANUFACTURE OR INTRODUCTION OF RADIOACTIVE MATERIAL INTO MANUFACTURED PRODUCTS AND DEVICES SPECIFIED IN 180 NAC 3-014.05, 3-014.06, 3-014.09, and 3-014.12 and 3-014.13. Licensees that manufacture or introduce radioactive material into products and devices must have personnel that meet the following education and training requirements.

008.01 RADIATION SAFETY OFFICER, AUTHORIZED USER, OR BOTH. The radiation safety officer, authorized user, or both must:

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

(B) Have 40 hours of formal instruction in:

(i) Radiation physics and instrumentation;

(ii) Radiation protection;

(iii) Mathematics pertaining to the use and measurement of radioactivity; and

(iv) Biological effects of radiation; and

(C) Demonstrate an understanding of operating and emergency procedures and these regulations or their equivalent.

009. PERSONNEL TRAINING AND EXPERIENCE REQUIREMENTS FOR LICENSES TO MANUFACTURE AND INTRODUCE RADIOACTIVE MATERIAL INTO RADIOPHARMACEUTICALS AS SPECIFIED IN 180 NAC 3-014.08. Licensees that manufacture and introduce radioactive materials into radiopharmaceuticals must have personnel that meet the following training and experience requirements.

009.01 RADIATION SAFETY OFFICER, AUTHORIZED USER, OR BOTH. The radiation safety officer, authorized user, or both must:

(A) Be a registered pharmacist;

(B) Have 200 hours of basic radioisotope handling techniques, including:

(i) Radiation physics and instrumentation;

(ii) Radiation protection;

(iii) Mathematics pertaining to the use and measurement of radioactivity;

(iv) Biological effects of radiation; and

(v) Radiopharmaceutical chemistry; and

(C) Have three-hundred hours experience as a radiopharmaceutical chemist.

010. TRAINING AND EXPERIENCE REQUIREMENTS FOR PARTICLE ACCELERATORS PERSONNEL - NON HUMAN USE. Licensees that operate particle accelerators for non human use must have personnel that meet the following requirements.

010.01 RADIATION SAFETY OFFICER, SUPERVISOR, OR BOTH. The radiation safety officer, supervisor, or both must have a bachelor of science degree plus one year experience in the use and operation of particle accelerators that includes forty hours of instruction as specified for particle accelerator operators in 180 NAC 15-010.02.

010.02 PARTICLE ACCELERATOR OPERATORS. Particle accelerator operators must:

(A) Have 40 hours of instruction in the fundamentals of radiation to include:

(i) Characteristics of radiation;

(ii) Units of radiation dose;

(iii) Biological effects of radiation; and

(iv) Levels of radiation from particle accelerators;

(B) Be instructed in the methods used to prevent radiation exposure at the specific facility to be operated, including:

(i) Shielding;

(ii) Interlock system;

(iii) Safety rules; and
(iv) Radiation monitoring equipment;
(C) Have one month of full time or equivalent on-the-job training under direct supervision. This training must be completed before assuming operational responsibility;
(D) Have instruction on the use and care of personnel monitoring equipment employed at the facility;
(E) Be familiar with the location and use of all operating controls;
(F) Be familiar with the requirements of pertinent regulations in this title; and
(G) Be familiar with the registrant's written operating and emergency procedures.

011. TRAINING AND EXPERIENCE FOR SELF-SHIELDED IRRADIATORS. Licensees that operate self-shielded irradiators must have authorized users that meet the following requirements.

011.01 AUTHORIZED USER. An authorized user must:
(A) Have eight hours of formal instruction in:
(i) Radiation physics and instrumentation;
(ii) Radiation protection;
(iii) Mathematics pertaining to the use and measurement of radiation; and
(iv) Biological effects of radiation; and
(B) Demonstrate an understanding of operating and emergency procedures and these regulations or their equivalent.

012. TRAINING AND EXPERIENCE REQUIREMENTS FOR INDUSTRIAL GAUGE PERSONNEL. Industrial gauge personnel must meet the following requirements.

012.01 RADIATION SAFETY OFFICER, AUTHORIZED USER, OR BOTH. The radiation safety officer or authorized user, or both must demonstrate competency in use, maintenance, and transfer of devices by satisfactorily completing an eight hour course provided by the manufacturer of the device or any Department accepted course.

013. TRAINING AND EXPERIENCE REQUIREMENTS FOR GAS CHROMATOGRAPH PERSONNEL. Gas chromatograph personnel must meet the following requirements.

013.01 RADIATION SAFETY OFFICER, AUTHORIZED USER, OR BOTH. The radiation safety officer or authorized user, or both, must receive and be competent in using operating procedures and manufacturer's instructions.

014. TRAINING AND EXPERIENCE REQUIREMENTS FOR INSTALLATION AND SERVICING OF RADIATION GENERATING EQUIPMENT AND ASSOCIATED RADIATION GENERATING EQUIPMENT AS SUPPLIED BY THE EMPLOYER. Personnel servicing radiation generating equipment must meet the following requirements.

014.01 INSTALLATION AND SERVICING PERSONNEL. A person performing installation or servicing of radiation generating equipment must have:
(A) Formal training in radiation machine assembly, installation, or repair, or an associate’s degree in biomedical equipment repair.
(B) Six months of supervised on-the-job training on the assembly or repair, or both, of the types of equipment to be serviced.

TITLE 180 CONTROL OF RADIATION

CHAPTER 15 TRAINING AND EXPERIENCE REQUIRMENTS FOR USE OF RADIATION SOURCES

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EFFECTIVE DATE NOVEMBER 28, 2016 | NEBRASKA DEPARTMENT OF HEALTH AND HUMAN SERVICES | 180 NAC 15

TITLE 180 CONTROL OF RADIATION

CHAPTER 15 TRAINING AND EXPERIENCE REQUIREMENTS FOR USE OF RADIATION SOURCES

15-001 SCOPE AND AUTHORITY

15-001.01 180 NAC 15 establishes the training and experience requirements of personnel in 180 NAC 3, 5, 6, 8, 9, 12 and 20.

15-001.02 It establishes the criteria which courses of instruction must possess prior to being approved by the Department for the certification training programs.

15-001.03 The regulations are authorized by and implement the Nebraska Radiation Control Act, Neb. Stat. Rev. §§ 71-3501 to 71-3520.

15-002 DEFINITIONS: As used in 180 NAC 15, the following definitions apply.

Experience means active participation in events or activities, leading to accumulation of knowledge.

Formal Training means training or education, including either didactic or clinical practicum or both, which has a specified objective, planned activities for students, and suitable methods for measuring student attainment, and which is offered, sponsored, or approved by an organization or institution which is able to meet or enforce these criteria.

15-003 RESERVED Removed.

15-004 RESERVED Removed.

15-005 RESERVED Removed.

15-006 RESERVED Removed.

15-007 RESERVED Removed.

15-008 RESERVED Removed.

15-009 RESERVED Removed.

15-010 RESERVED Removed.

15-011 RECENTNESS OF TRAINING: The training and experience specified in 180 NAC 15 must have been obtained within the seven years preceding the date of application or the individual must have had related continuing education and experience since the required training and experience was completed.

15-012 RESERVED Removed.

15-013 MINIMUM QUALIFICATIONS FOR RADIOLOGICAL MEDICAL PHYSICIST, RADIOLOGICAL HEALTH PHYSICIST AND QUALIFIED EXPERT

15-013.01 Radiological Medical Physicist means a person having the knowledge and training to measure ionizing radiation, to evaluate safety techniques, and to advise regarding radiation protection needs. This person must have training and experience in the clinical applications of radiation physics. This person must have at least the following:

1. Is certified by the American Board of Radiology in Therapeutic Radiological Physics, Roentgen Ray and Gamma Ray Physics, X-Ray and Radium Physics; or Radiological Physics; or the American Board of Medical Physics in Radiation Oncology Physics or the Canadian College of Medical Physics. Certification must be in the specialty the individual will be clinically practicing, or

2. Holds a Master's or Doctor's Degree in physics, medical physics, other physical science, engineering, applied mathematics, nuclear physics, biophysics, radiological physics, or health physics and has completed one year of full time training in medical physics and an additional year of full time work experience under the supervision of a Radiological Medical Physicist that meets the requirements of 15-013.01, item 1 at a medical institution. Full time training and full time work experience must be in the specialty the individual will be clinically practicing.

15-013.02 Radiological Health Physicist with reference to radiation protection, means a person having the knowledge and training to measure ionizing radiation, to evaluate safety techniques, and to advise regarding radiation protection needs (for example, persons having relevant certification from the American Board of Radiology or American Board of Health Physics, or those having equivalent qualifications). With reference to shielding design, a person having particular knowledge and training in the field of radiation shielding. This person must have at least the following:

1. Is certified by the American Board of Health Physics or the American Board of Radiology in Therapeutic Radiological Physics, Roentgen Ray

and Gamma Ray Physics, X-Ray and Radium Physics, or Radiological Physics, Diagnostic Radiologic Physics; or the American Board of Medical Physics, or the Canadian College of Medical Physics; or

2. A Master's or a Doctor's degree in a physical or natural science or equivalent, biophysics, radiological physics or health physics, plus one year of full time experience in radiation protection and measurements, or

3. A Bachelor's Degree in a physical or natural science or equivalent, plus three years of full time training and experience in radiation protection and measurements and a written statement from a radiological health physicist as defined in 180 NAC 15-013.02, items 1 or 2 that two years of training and experience in radiation protection and measurements were obtained under his/her supervision.

15-013.03 Qualified Expert means an individual who has demonstrated to the satisfaction of the Department that s/he possesses the knowledge and training to measure ionizing radiation, to evaluate safety techniques, and to advise regarding radiation protection needs. This person must have at least the following:

1. A Bachelor's Degree in a physical or natural science, and one year of experience in radiation protection and measurements, or
2. A Certificate or an Associate Degree from an accredited radiological technology school and one year of experience in radiation protection and measurements.

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15-014 RESERVED Removed.

15-015 TRAINING AND EXPERIENCE REQUIREMENTS FOR PERSONNEL FOR INSTITUTIONAL BROAD SCOPE TYPE LICENSE A, B, AND C LISTED IN 180 NAC 3-013

15-015.01 The minimum qualifications are:

1. Radiation Safety Officer

a. A college degree at the bachelor level, in physical or biological sciences or in engineering plus four years work experience in health physics, radiological health or another field equivalent to the above fields; or

b. A master's degree of graduate work in health physics or radiological health with two years of work experience in health physics or radiological health.

2. Authorized User

a. A college degree at the bachelor level, or equivalent training or experience, in the physical or biological sciences or in engineering; and

b. At least 40 hours of formal instruction in:

(1) Radiation physics and instrumentation;
(2) Radiation protection;
(3) Mathematics pertaining to the use and measurement of radioactivity; and
(4) Biological effects of radiation; and

c. One-Hundred and Sixty hours experience in the safe handling of radioactive material.

15-016 PERSONNEL TRAINING AND EXPERIENCE REQUIREMENTS FOR LICENSEE'S IN AN EDUCATIONAL INSTITUTION OTHER THAN BROAD SCOPE LICENSES

15-016.01 Radiation Safety Officer and/or Authorized User:

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

2. Forty hours of formal instruction in:

a. Radiation physics and instrumentation;
b. Radiation protection;
c. Mathematics pertaining to the use and measurement of radioactivity, and
d. Biological effects of radiation; and

3. Demonstrate an understanding of institution radiation safety policy and procedures and Title 180 or their equivalent.

15-017 TRAINING AND EXPERIENCE REQUIREMENTS FOR LABORATORY AND INDUSTRIAL USE OF RADIOACTIVE MATERIAL PERSONNEL

15-017.01 For Millicurie Quantities:

1. Radiation Safety Officer and/or Authorized User:

a. A college degree at the bachelor level, or equivalent training and experience in the physical or biological sciences or in engineering; and

(1) Forty hours of formal instruction in:

(a) Radiation physics and instrumentation;
(b) Radiation protection;

(c) Mathematics pertaining to the use and measurement of radioactivity; and
(d) Biological effects of radiation; and

(2) Demonstrate an understanding of operating and emergency procedures and Title 180 or their equivalent.

15-017.02 For Microcurie Quantities:

1. Radiation Safety Officer and/or Authorized User:

a. Forty hours of formal instruction in:

(1) Radiation physics and instrumentation;
(2) Radiation protection;
(3) Mathematics pertaining to the use and measurement of radioactivity; and
(4) Biological effects of radiation; and

b. Demonstrate an understanding of operating and emergency procedures and Title 180 or their equivalent.

15-018 PERSONNEL TRAINING AND EXPERIENCE REQUIREMENTS FOR LICENSES TO MANUFACTURE OR INTRODUCTION OF RADIOACTIVE MATERIAL INTO MANUFACTURED PRODUCTS AND DEVICES SPECIFIED IN 180 NAC 3-014.05, 3-014.06, 3-014.09, and 3-014.12 and 3-014.13

15-018.01 Radiation Safety Officer and/or Authorized User:

1. A college degree at the bachelor level, or equivalent training and experience in the physical or biological sciences or in engineering; and
2. Forty hours of formal instruction in:

a. Radiation physics and instrumentation;
b. Radiation protection;
c. Mathematics pertaining to the use and measurement of radioactivity;
d. Biological effects of radiation; and

3. Demonstrate an understanding of company radiation safety policy and procedures and Title 180 or their equivalent.

15-019 PERSONNEL TRAINING AND EXPERIENCE REQUIREMENTS FOR LICENSES TO MANUFACTURE AND INTRODUCE RADIOACTIVE MATERIAL INTO RADIOPHARMACEUTICALS AS SPECIFIED IN 180 NAC 3-014.08

15-019.01 Radiation Safety Officer and/or Authorized User:

1. A registered pharmacist;
2. Basic radioisotope handling techniques of 200 hours, including:

   a. Radiation physics and instrumentation;
   b. Radiation protection;
   c. Mathematics pertaining to the use and measurement of radioactivity;
   d. Biological effects of radiation; and
   e. Radiopharmaceutical chemistry.
3. Three-hundred hours experience as a radiopharmaceutical chemist.

15-020 RESERVED Removed.

15-021 RESERVED Removed.

15-022 RESERVED Removed.

15-023 RESERVED Removed.

15-024 RESERVED Removed.

15-025 TRAINING AND EXPERIENCE REQUIREMENTS FOR PARTICLE ACCELERATORS PERSONNEL NON HUMAN USE

15-025.01 Radiation Safety Officer or Supervisor must have a Bachelor of Science Degree plus one year experience in the use and operation of particle accelerators which includes forty hours instruction as specified for particle accelerator operators.

15-025.02 Operators must have 40 hours instruction in subject matter listed below and three months experience, the first one month on-the-job training must be under direct supervision.

1. Forty Hours instruction of Particle Accelerator Operators

   a. All operators must be instructed in the fundamentals of radiation.

      (1) Characteristics of radiation.
      (2) Units of radiation dose (sievert/rem).
      (3) Biological effects of radiation.
      (4) Levels of radiation from particle accelerators.
      (5) Methods used to prevent radiation exposure at the specific facility to be operated:

         (a) Shielding
         (b) Interlock system
         (c) Safety rules
         (d) Radiation monitoring equipment

2. All operators must:

a. Be instructed on the use and care of personnel monitoring equipment employed at the facility.
b. Be familiar with the location and use of all operating controls.
c. Be familiar with the requirements of pertinent State regulations.
d. Be familiar with the registrant's written operating and emergency procedures.
e. Receive at least one month of full time or equivalent on-the-job training before assuming operational responsibility.

15-026 TRAINING AND EXPERIENCE FOR SELF-SHIELDED IRRADIATORS

1. Authorized User:

a. Eight hours of formal instruction in:

(1) Radiation physics and instrumentation;
(2) Radiation protection;
(3) Mathematics pertaining to the use and measurement of radiation; and
(4) Biological effects of radiation; and

b. Demonstrate an understanding of operating and emergency procedures and Title 180 or their equivalent.

15-027 TRAINING AND EXPERIENCE REQUIREMENTS FOR INDUSTRIAL GAUGE PERSONNEL

15-027.01 Radiation Safety Officer and/or Authorized User: Demonstrate competency in use, maintenance and transfer of device by satisfactory completion of eight hour course provided by the manufacturer of the device or any Department accepted course.

15-028 RESERVED Removed.

15-029 TRAINING AND EXPERIENCE REQUIREMENTS FOR GAS CHROMATOGRAPH PERSONNEL

15-029.01 Radiation Safety Officer and/or Authorized User: Has received and is competent in operating procedures and manufacturer's instructions.

15-030 RESERVED Removed.

15-031 RESERVED Removed.

15-032 TRAINING AND EXPERIENCE REQUIREMENTS FOR MANAGEMENT OF RADIOACTIVE WASTE PERSONNEL

15-032.01 Radiation Safety Officer (RSO)

1. The RSO must have experience in applied radiation protection at nuclear facilities or waste disposal sites dealing with radiation protection problems. The individual should be familiar with the design features and operations of LLW sites that affect the potential for exposures of site personnel to radiation. In addition, the RSO should have the technical competence to establish radiation protection programs and the supervisory capability to direct the work of radiation protection technicians.

2. The RSO should have a bachelor's degree in science or engineering (or equivalent), including formal training in radiation protection. Minimum acceptable substitutes for a bachelor's degree are a high school diploma or its equivalent and one of the following: (1) four years of formal schooling in science or engineering, (2) four years of applied experience at a nuclear facility in the area of radiation protection, or (3) any combination of the above totaling four years, and

3. The RSO should have at least three years of experience in radiation protection, one year of which should be at a LLW disposal site. If the RSO does not have a bachelor's degree, then a total of seven years experience is recommended. A master's degree and doctor's degree may be considered equivalent to one and two years experience, respectively, if the course work is related to radiation protection.

15-032.02 Radiation Protection Technician

1. The senior radiation protection technician should have three years of working experience in radiation protection of which one year should be from an LLW disposal site. The technician should possess a high degree of manual dexterity and ability, and should be capable of learning and applying basic skills.

2. Individuals in training or apprentice positions should not be considered technicians, but should be permitted to perform work for which qualification has been demonstrated. The classification of radiation protection technicians should be as follows:

   a. In training (minimal experience) - apprentice technician.
   b. 0-3 years experience - technician.
   c. Greater than three years experience - senior technician.

However, time alone is not enough. Any training and advancement program should also require technicians to pass written and oral examinations before advancing to different technician levels.

15-032.03 Radiation Protection Training Instructor

1. At the time of appointment to the instructor position, the responsible individual must have experience in applied radiation at nuclear facilities dealing with the radiation protection problems and programs similar to those at LLW disposal sites. The individual should be familiar with the design features and operations of LLW sites that affect the potential for exposure of site personnel to radiation.

2. The instructor should have an associate's degree in science or engineering (or equivalent), including formal training in radiation protection. Minimum acceptable substitutes for an associate degree are a high school diploma or its equivalent and one of the following: (1) two years of formal schooling in science or engineering, (2) two years of applied experience at a nuclear facility in the area of radiation protection, or (3) any combination of the above totaling two years. The instructor should have one year of experience in radiation protection at an LLW disposal site. If the instructor does not have an associate's degree, then a total of three years experience is recommended.

15-032.04 General Employee: Information on the LLW site's radiation protection policy and program should be presented to all new employees during the general employee orientation training. The orientation training should consist of classroom instruction and may be supplemented by other training methods. Written material covering the basic topics of the training should be distributed to the new employees for future reference. Visitor and contractor personnel should be given the same training, if it is expected that they may encounter radioactive material or radiation levels above background. It is recommended that the classroom instruction phase of this training be at least eight hours in length.

15-032.05 Radiation Worker: Personnel who work in a radiation area are termed radiation workers and their radiation worker training must be received prior to entering or beginning work in a radiation area. The classroom instruction phase of this training must be at least twenty hours in length.

Removed.

15-033 TRAINING AND EXPERIENCE REQUIREMENTS FOR INSTALLATION AND/OR SERVICING OF RADIATION GENERATING EQUIPMENT AND ASSOCIATED RADIATION GENERATING EQUIPMENT AS SUPPLIED BY THE EMPLOYER

15-033.01 A minimum of eight hours of formal course work or as approved by the Department should be completed and include the following:

1. Radiation physics and instrumentation
2. Radiation protection
3. Mathematics pertaining to the use and measurement of radiation
4. Biological effects of radiation

15-033.02 On-the-job training should include hands-on experience installing and/or servicing radiation generating equipment and associated radiation generating equipment

components. On-the-job training must be for six months under the supervision of an individual who has completed the training in 180 NAC 15-033.01.