# NEBRASKA DEPARTMENT OF HEALTH AND HUMAN SERVICES

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> Pursuant to Neb. Rev. Stat. § 84-901.03



DEPT. OF HEALTH AND HUMAN SERVICES



# **REGULATORY GUIDE 6.2** GUIDE FOR THE PREPARATION OF A RADIATION PROTECTION AND SAFETY PROGRAM FOR USE OF RADIATION MACHINES

#### I. INTRODUCTION

The purpose of this document is to provide guidance to registrants in preparing a Radiation Protection Program. Title 180 "Control of Radiation" NAC 4-004.01 requires that each registrant "develop, document, and implement a radiation program sufficient to ensure compliance with the provisions of 180 NAC 4."

The model procedures in this regulatory guide are generalized. You must write procedures that are specific for your facility. By using the section of this guide that apply, you may create your unique set of operating and safety procedures.

The information in this guide may be used as a "checklist" or as a basis on which to formulate a documented Radiation Protection Program for the use of radiation machines in the healing arts. All of the following information may not be applicable to each registrant and therefore, may not be necessary to include it in the Radiation Protection Program. Also, the information listed in this guide may not be all-inclusive for a particular registrant authorized for medical use of x-ray machines and therefore, must be expanded upon so that the Radiation Protection Program is in accordance with 180 NAC 4-004.01.

All components of a Radiation Protection Program do not have to be contained in one consolidated document. However, all components do have to be documented and identified as being part of the Radiation Protection Program. Records of audits and other reviews of the Radiation Protection Program content and implementation must also be maintained for inspection by the Department in accordance with 180 NAC 4-047.

Regulatory Guides are issued to describe and make available to the public acceptable methods of implementing specific parts of Title 180 NAC Nebraska regulations, "Control of Radiation," to delineate techniques used by the staff in evaluating specific problems or postulated accidents, or to provide guidance to applicants, licensees, or registrants. Regulatory Guides are not substitutes for regulations and compliance with them is not required. Methods and solutions different from those set out in the guides will be acceptable if they provide a basis for the DHHS, Division of Public Health, Office of Radiological Health, to make necessary determination to issue or continue a license or certificate of registration.

Comments and suggestions for improvements in these Regulatory Guides are encouraged at all times and they will be revised, as appropriate, to accommodate comments and to reflect new information or experience. Comments should be sent to:

DHHS - Division of Public Health Office of Radiological Health 301 Centennial Mall South P.O. Box 95026 Lincoln, NE 69509-5026. OR DHHS.RadiationPrograms@nebraska.gov

Copies of issued guides can be obtained at: www.dhhs.ne.gov/rad.

## II. SAMPLE RADIATION PROTECTION PROGRAM

#### **RADIATION PROTECTION PROGRAM FOR:**

(name of facility)

This guide establishes procedures that will minimize radiation exposure to patients and employees. They are provided to comply with regulations enforced by the Nebraska Department of Health and Human Services. The regulations require that each x-ray facility be registered with the Department and pay annual renewal fees.

A copy of 180 NAC (Nebraska Regulations for Control of Radiation) is available for your review at http://dhhs.ne.gov/Pages/Title-180.aspx. **Note:** The copy of 180 NAC can be a hard copy, an electronic copy or viewed on the internet at the facility. If the internet is used, indicate what facility computer can be used and have the website bookmarked. [See 180 NAC 10-002]

#### **RADIATION PROTECTION PROGRAM CONTENTS**

All registrants will designate a radiation safety officer (RSO). The RSO has the responsibility and authority to assure and enforce safe practices when using radiation machines. RSO's are expected to have knowledge of the hazards of working with an x-ray machine, education related to ionizing radiation safety, or experience in the use of the x-ray machine at the facility.

The RSO is responsible for establishing and maintaining operating and safety procedures so radiation exposure is as low as is reasonably achievable (ALARA). RSO's are also responsible for investigating and reporting excessive radiation exposure or any loss of an x-ray machine. The RSO is considered the person responsible for the radiation safety program of facilities using x-ray machines. Direct all your questions or concerns on radiation safety to the RSO for this facility, <u>(specify name)</u>. [See 180 NAC 2-004.02]

The radiation protection program must be reviewed annually in accordance to 180 NAC 4-004.03. The following items are specific documents, records, procedures, and/or instructions that may be part of a Radiation Protection Program.

#### A. Personnel Monitoring Requirements

Note: Personnel monitoring will not be required if there is sufficient documentation that employees are not likely to exceed 10% of the dose limits for adults, minors or declared pregnant women.

1. All occupational dose limits are found in 180 NAC 4-005.

- 2. Any adult who is likely to receive a dose from occupational exposure to radiation in excess of 500 millirem in a year [180 NAC 4-022.01 (A)] or any minor in excess of 100 millirem in a year [180 NAC 022.01 (B)] must use an individual monitoring device.
  - a) Individual monitoring devices used for monitoring the dose to the whole body should be worn at the unshielded location where it will receive the highest exposure.
  - b) If more than one device is used and a record is made of the data, each dose must be identified with the area where the device was worn on the body.
  - c) When an apron is worn, the individual monitoring device must be worn outside of apron around neck (collar).
- 3. Declared pregnant women who are likely to receive a dose from occupational exposure to radiation in excess of 100 millirem during the entire pregnancy must also use an individual monitoring device. [See 180 NAC 4-022.01 (C)]
  - a) If a woman voluntarily informs the RSO in writing of her pregnancy, the facility must ensure that the dose to the embryo/fetus does not exceed 0.5 rem (500 mrem) during the entire pregnancy. [180 NAC 4-012.01]
  - b) Additional individual monitoring devices used for monitoring the dose to the embryo/fetus of a declared pregnant woman should be located at the waist under any protective apron being worn by the woman.
  - c) If an employee does not declare their pregnancy in writing, for radiation safety purposes they are not considered to be pregnant and the 50 mSv (5 rem) occupational exposure limit applies.
- 4. The individual monitoring device must be assigned to and must be worn only by one individual. [180 NAC 1-002.57]
- 5. If you are working for another employer and receive an occupational dose, you should report that dose to the RSO so that it can be included in your annual record of occupational dose. The cumulative exposure from each job is the occupational exposure limit. No employee is allowed to receive more than 50 mSv (5 rem) in a calendar year from all employment during that year. [180 NAC 4-009]
- Records of employee exposure must be retained, even after the employee has left. [180 NAC 4-052.05] Upon departure, each employee may request a copy of their final monitoring report that shows their exposure for the entire employment period. [180 NAC 10-004.03]
- 7. Individual monitoring devices not in use and the control badge will be stored away from rooms where radiation machines are in use. They are located in/at <u>(specify location)</u>.

- 8. <u>(Specify name)</u> is responsible for the occupational dose records and exchanging the individual monitoring devices on <u>(specify exchange dates)</u>.
- 9. The individual monitoring device readings (dosimetry reports) are located in/at <u>(specify</u> <u>location)</u>.

#### B. Posting Notices, Instructions, and Reports to Workers; and Posting a Radiation Area

- 1. Read the NRH-3 "Notice to Employees" sign posted in/at <u>(specify locations)</u>. (Form NRH-3 "Notice to Employees" can be printed from the web site at: https://dhhs.ne.gov/Pages/Radiation-Control-Forms.aspx) [180 NAC 10-002.03]
- The certificate of registration, operating and safety procedures, and any notices of violations involving radiological working conditions are located in/at <u>(specify locations)</u>. [180 NAC 10-002.01]
- 3. Your rights and obligations as a radiation worker are found in 180 NAC 10-003, 10-004, 10-005, and 10-007.
- 4. Each machine is labeled in a conspicuous manner, which cautions individuals that radiation is produced when it is energized. [180 NAC 4-036.03]
- 5. Each area is posted as required by 180 NAC 4-034.
- 6. The RSO will oversee the posting of the above signs.

#### C. Compliance with Dose Limits to the Public

All registrants must control doses to individual members of the public as required by 180 NAC 4-013.01. Documentation showing compliance with these dose limits is available at <u>(report</u> <u>location)</u>.

#### **D.** Inspections and Documentation

X-ray facilities are subject to inspections by the Nebraska Health and Human Services Regulation and Licensure's X-ray Program. [180 NAC 10-005.01]

All records are to be maintained and made available for such inspection. Documentation of all inspections will be kept on file. [180 NAC 6-003.16]

## E. Recordkeeping

The records will be maintained by <u>(name of individual)</u>. The records and manuals will be kept in <u>(record location)</u>.

	Name of Records/Document	Regulation Cross- Reference	Record Retention
I	Radiation protection program	180 NAC 4-047.02	Until termination of registration
	Radiation protection program review	180 NAC 4-047.02	3 years after the record is made
	Records of individual monitoring results	180 NAC 4-052.05	Until termination of registration
IV	Records of dose to individual members of the public	180 NAC 4-053.02	Until termination of registration
V	Current 180 NAC 4 and 180 NAC 10	180 NAC 10-002.01 (A)	
VI	Current Certificate of Registration (NRH-4)	180 NAC 10-002.01 (B)	
VII	Operating and safety procedures	180 NAC 10-002.01 (C)	
VIII	Notice of violation from last inspection	180 NAC 10-002.01 (D)	
IX	Instructions to workers	180 NAC 10-003.03	Until reviewed by Department