

(Revised 3/20)

## USE OF DIAGNOSTIC X-RAY EQUIPMENT IN THE HEALING ARTS

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This Safe Operating Procedure (SOP) summarizes regulatory and UNL policy requirements to possess and operate diagnostic x-ray equipment in the healing arts. The healing arts include human medicine and associated research, dentistry and veterinary medicine.

### Definitions

Definitions to assist in the implementation of this SOP are provided below.

**Dental installation** means a dental diagnostic x-ray equipment installation.

**Human medicine** installation means a non-dental, diagnostic x-ray equipment installation.

**Licensed practitioner** means an individual licensed in Nebraska to practice human medicine, dentistry, or veterinary medicine.

**Radiographic service provider** means an individual operating diagnostic x-ray equipment under the supervision of the licensed Practitioner.

**Veterinary installation** means a veterinary medicine diagnostic x-ray equipment installation.

### Credentials for Diagnostic X-Ray Equipment Use

#### Human Medicine

The use of x-ray equipment for the intentional exposure of humans for diagnosis or treatment, including research, must be by or under the supervision of an individual currently licensed to practice the healing arts in Nebraska. All intentional exposures shall be specially and individually ordered by the licensed Practitioner.

Individuals providing diagnostic radiographic services under the direction/supervision of a licensed Practitioner must be currently licensed in Nebraska as a Medical Radiographer or Limited Radiographer.

#### Dental Installation

The use of x-ray equipment for the intentional exposure of humans for dental diagnosis or treatment must be by or under the supervision of an individual currently licensed to practice dental healing arts in Nebraska. All intentional exposures shall be specially and individually ordered by the licensed Practitioner.

Individuals providing diagnostic radiographic services under the direction/supervision of a licensed Practitioner must be currently licensed in Nebraska as a Dental Hygienist or an



individual (e.g., Dental Assistant) that has successfully completed a State approved course in Dental Radiography (this credential is typically demonstrated through the successful completion of an accredited Dental Assistant degree program).

### **Veterinary Installation**

The use of x-ray equipment in the practice of veterinary medicine must be by or under the supervision of an individual currently licensed to practice veterinary medicine in Nebraska. Instructions for the use of x-ray equipment on animals in research are provided in the EHS SOP, ***Analytical X-Ray Equipment and Other Common Radiation Generating Equipment***.

Individuals providing diagnostic radiographic services under the direction/supervision of a licensed Practitioner must have successfully completed an accredited Veterinary Technicians degree program, which is demonstrated through state licensure or diploma as a Veterinary Technician.

### **Approval to Possess or Operate Diagnostic X-Ray Equipment in the Healing Arts**

The Department employing the use of x-ray equipment for the purposes described in this SOP must identify a Supervising Practitioner. The Supervising Practitioner must be a currently licensed Physician, Dentist or Veterinarian depending on the installation type. If the supervising Practitioner or radiographic service provider (e.g., Medical/Limited Radiologist, Dental Hygienist, Dental Assistant or Veterinary Technician) is staffed through contracted services or a rotation of UNL staff, then the Department shall identify a UNL faculty/administrator to assume overall responsibility for the installation.

All x-ray equipment installations are approved by the UNL Radiation Safety Committee (RSC). To achieve RSC approval:

- Complete an approval application, which can be obtained through the Radiation Safety Office. Authorization applications require Department Head/Chair concurrence. Information needed to complete the approval application includes:
  - Supervising Practitioner, including copy of current license.
  - Radiographic service provider, including copy of current license or diploma as appropriate.
  - UNL faculty/administrator responsible for the installation.
  - Point of Contact for Radiation Safety Office inspections.
  - Model and serial number of x-ray equipment.
  - Shielding review of floor plans and equipment arrangement of new installations or modifications to existing installations.
- Commission the diagnostic x-ray equipment and operation location through inspection by the Radiation Safety Office.
- Obtain approval of the installation from the UNL RSC.

The responsible individual for the installation shall notify the Radiation Safety Office of changes of individuals that supervise or operate the x-ray equipment.



### Registration

All x-ray equipment must be registered with the Nebraska Department of Health and Human Services within 30 days of receipt, change in location or disposal. The Radiation Safety Office maintains this registration. The responsible individual for the installation shall promptly notify the Radiation Safety Office of any such changes. The receipt of new equipment or relocation of existing equipment constitutes a new installation requiring RSC approval.

### Training

For Practitioners, Medical/Limited Radiographers, and Dental Hygienists, initial Radiation Safety training is demonstrated through State licensure. For Dental Assistants and Veterinary Technicians, initial Radiation Safety training is demonstrated through the completion of an accredited degree program in the appropriate discipline. Annual Radiation Safety refresher training is recommended for Practitioners and radiographic service providers. The Radiation Safety Office provides the Annual Radiation Safety refresher training.

### Radiation Surveys and Inspections

At a minimum, Radiation Safety Office staff will survey/inspect x-ray equipment installations annually to evaluate compliance with regulatory requirements. These routine inspections will be scheduled with the identified Point of Contact. X-ray operation by the Practitioner or radiographic service provider will be required during the inspection.

As previously discussed, the receipt of new x-ray equipment, relocation of existing equipment or modifications to existing installations constitutes a new installation requiring RSC approval, including a commissioning inspection by the Radiation Safety Office. The responsible individual for the installation shall promptly notify the Radiation Safety Office when such changes are planned.

### Equipment Performance Evaluations

Equipment performance evaluations are not required for bone densitometer and veterinary installations. Equipment performance evaluations are required for all other installations. Equipment performance evaluations are required every 3 and 5 years for human medicine and dental installations, respectively. Contract vendors currently perform these evaluations.

### Procedures and Charts

Written operating and safety procedures are to be made available to the x-ray operators, including patient holding and any restrictions of the operating technique required for the safe operation of the particular x-ray system. Procedures and auxiliary equipment designed to minimize patient and personnel exposure commensurate with the needed diagnostic information must be utilized.

A chart must be provided in the vicinity of the diagnostic x-ray system's control panel, which specifies procedures (e.g., technique factors, focal distance, source to receptor distance, etc.) for all exams performed.



Additionally, each installation must maintain an x-ray log or chart containing the patient's identification, the type of examinations, the dates the examinations were performed, and the x-ray equipment operator's name. When the patient or film must be provided with human auxiliary support, the name of the human holder must be recorded.

### **Dosimetry Requirements**

Dosimetry is not required for operators of dental diagnostic x-ray equipment. Operators of all other diagnostic x-ray equipment will be issued dosimetry consisting of a torso badge. Detailed instruction for the proper use of dosimetry is provided in the EHS SOP, ***Dosimetry Program***. X-ray equipment shall not be operated without properly worn dosimetry.

If dosimetry is lost or damaged, the Radiation Safety Office shall be promptly notified and replacement dosimetry will be issued. Dosimetry is exchanged on a quarterly basis (monthly for fetal dosimeters). The responsible individual for the installation shall ensure dosimetry is returned to the Radiation Safety Office in a timely manner for processing.

### **Records**

Each installation shall maintain records of equipment calibration, maintenance, and performance tests when required. An x-ray utilization log or chart shall be maintained (can be maintained electronically), which includes patient identification, type of examination and the date the examination was performed. When the patient or film must be provided with human auxiliary support, the name of the human holder must be recorded. The responsible individual shall ensure such records are maintained and readily available.