X-Ray Regulatory Guide for Dental Facilities



STATE OF WISCONSIN

DEPARTMENT OF HEALTH SERVICES

Division of Public Health

Bureau of Environmental and Occupational Health

Radiation Protection Section

PO Box 2659

Madison, Wisconsin 53701

P-01639C (04/2017)

# SAMPLE RADIATION SAFETY POLICY

All registrants are required to have a radiation safety program and a written radiation safety policy. This sample policy is to help a registrant include in the written safety policy with the minimum standards to meet Wis. Admin. Code ch. DHS 157 safety requirements. This is not an all-inclusive document. Additions and adjustments may need to be made to meet your current radiation uses.

## Changes in Registration

If there are changes in the registration for this facility, such as change of address, responsible party, etc., written notice must be sent to the Department of Health Services (DHS) within 30 days of the change. Change of ownership requires a new registration with full fees paid by the new owner. Addition of new equipment and/or the replacement/removal of old equipment also needs to be reported to ensure your annual registration fees are accurate. Changes to the registration information may be faxed to 608-267-4799 or mailed to Division of Public Health, Radiation Protection Section, PO Box 2659, Madison, WI 53701-2659. If you would like to send this electronically, please call 608-267-4782.

Current contact information for DHS is available at the following web address: <https://www.dhs.wisconsin.gov/radiation/xray/index.htm>

# OPERATING and SAFETY PROCEDURES

## Operating and Safety Procedures

This policy establishes procedures that will minimize radiation exposure to employees. The policy statements are provided to comply with regulations enforced by DHS Radiation Protection Section. The regulations require that each x-ray facility and all x-ray devices at that address be registered with DHS and pay annual renewal fees.

The registrant MUST designate a person responsible for oversight and annual review of these procedures. This person is often referred to as the Person-in-Control or the Radiation Safety Officer (RSO). This individual has the responsibility and authority for assuring safe radiation practices and serves as the contact person between this facility and DHS. All questions and concerns regarding radiation safety for this facility should be directed to the RSO:

## Posting Notices, Instructions, and Reports to Workers

Employees must be familiar with the "Notice to Employees" document, which needs to be posted in an employee accessible area.

The location of written operations and safety procedures and location of where the regulations can be accessed is to be written in the lined box at the top of the “Notice to Employees” sign.

The certificate of registration, issued annually at the time of registration renewal, the operating and safety procedures and any notices of violations involving radiological working conditions are located in/at radiology. Specify the area in your procedures. .

The practice is required to provide staff access to the regulations. Your rights and obligations as a radiation worker are found in § DHS 157.88. A copy of the regulations may be found on the RPS website ( <https://www.dhs.wisconsin.gov/radiation/xray/index.htm> )

A copy of the Notice to Employees is available at our website <https://www.dhs.wisconsin.gov/radiation/index.htm> or by calling the Radiation Protection Section at 608-267-4782.

# OPERATOR SAFETY

## Training Requirements for X-Ray Machine Operators

All operators of x-ray machine must be trained:

1. To operate the equipment safely, i.e., procedures for hand-held units.
2. In selection of proper technique factors (time, mA, mAs, or kVp).
3. To position the patient and equipment properly.
4. To process the image properly.
5. In the use of personal protective equipment (apron, gloves, thyroid collar, etc.).

All operators of x-ray units shall acknowledge receipt of this training by signing an Operation and Safety Procedure Verification form located in or nearby the location of the x-ray device. (Wording for a Operation and Safety Procedure Verification form can be found in **Appendix B of the** [X-ray Regulatory Guide, P-01639](https://www.dhs.wisconsin.gov/publications/p01639.docx)**).**

Training documentation will include a copy of the operating and safety procedures, as well as specific equipment-use training, date(s) of the training, a list and signatures of staff in attendance, and the qualifications of the person providing the instruction. (Wording for a Training documentation form can be found in **Appendix C of the** X-ray Regulatory Guide). X-ray machine operators need to be trained on each piece of x-ray equipment they will be using. Although they may have used similar equipment in the past, each unit could have unique operating characteristics.

## Individual Radiation Monitoring Requirements (DOSIMETRY)

DHS 157.25(2) requires occupational doses be below 5 mSv (500 mRem) per year to avoid monitoring (dosimetry/film badges). To document the site is below the threshold, a new facility will need to provide monitoring of personnel for one year to ensure adequate protection for the operators. Monitoring may be discontinued if the results indicate that no employee is likely to receive 5 mSv in (500 mRem) a year. Other options would be having a state inspector or medical physicist conduct an area radiation survey.

In addition, if an employee who operates a dental x-ray machine is likely to be exposed to 5 mSv (500 mRem) per year, then they are required to be assigned an individual radiation monitoring device (personal dosimeter). If previous radiation monitoring records show that it is unlikely that a person will be exposed to 5 mSv (500 mRem), then monitoring is ***not*** required. It is recommended that dosimetry be provided to radiation workers every five years for 12 months. This will help document a radiation safe workplace. It is also recommended new radiation workers be monitored for the first year.

Changes made to the office configuration, such as relocation of x-ray equipment or replacement of one type of equipment with another (panorex or intra-oral), may require re-testing with dosimeters to ensure that adequate operating procedures are in place. Shielding plan approval ***is*** required prior to installation of cone beam CT and cephalometric machines, at which time dosimetry use may also be recommended.

Your procedures should indicate whether the site ***has or has not*** issued dosimetry to staff.

## Use of Protective Devices

1. In the event that assistance is needed holding the patient or the image receptor, the holder shall wear a leaded apron and use hand protection when applicable. Holding of the x-ray tube/cone is prohibited.
2. Hand-held dental x-ray devices must have the backscatter shield properly in place. With proper placement, the use of protective devices is not required.
3. Protective devices must be checked annually for defects such as holes, cracks, or tears. This check can be done by visually inspecting or feeling the protective devices or by x-raying these items. If a defect is found at the time of either the radiographic or visual check or on any other occasion, notify the RSO and remove the device from service until it can be repaired or replaced. A record will be kept of these checks and be made available to an inspector. See Appendix E.

## Holding of Patients and/or Image Receptor

1. Holding the image receptor in the patient’s mouth by the operator should be avoided. Image receptor holding devices should be used unless there are patient management issues that may require parents, guardians, or staff to hold the image receptor in place.
2. When holding an image receptor in position is necessary, the following precautions are recommended:
	1. Always try to use a remote holding device to stabilize the image receptor in position.
	2. If the image receptor is to be held in position using a finger, try to utilize a non-employee.
	3. If an employee must hold the image receptor with a finger, it is recommended that he/she not be over utilized in order to prevent exceeding the permitted occupational exposure to the extremities.
	4. No employee may be assigned the task of holding the image receptor on a regular basis.
	5. The person holding the image receptor shall always wear a lead apron.
3. The tub housing shall not be held during an exposure by any person, including staff, patient, or other individuals. If the tube support assembly is unstable and the tube drifts during an exposure, the unit shall be taken out of service and repaired.

## Radiation Incident or Overexposure

If any person suspects that there has been an excessive exposure or a radiation incident (i.e., exposing yourself or a coworker to the direct beam), immediately notify the RSO who will then notify DHS by phone 608-267-4787 and by fax 608-267-4799. DHS will investigate the alleged incident.

# PATIENT SAFETY

## As Low As Reasonable Achievable (ALARA)

To meet the intent of ALARA, the operator shall:

* 1. Use the lowest possible radiation exposure for each exam to obtain a diagnostic image, i.e., using the fastest speed image receptor available with the shortest exposure time.
	2. Avoid repeat x-rays by setting the correct technique obtained from technique charts available or using proper, preprogrammed settings within the x-ray control.
	3. Accurately position the tube head and image receptor.
	4. Provide the patient, especially children and women in childbearing years, with a thyroid collar and leaded apron (gonadal shielding), if requested.
	5. Where applicable, the primary beam cannot be any larger than the image receptor.

## Ordering of X-Ray Exams

No x-ray exams shall be taken unless ordered by a licensed healing arts practitioner. DHS 157 defines a licensed practitioner as a chiropractor, dentist, physician, podiatrist, physician assistant, nurse practitioner, radiologist’s assistant, or physical therapist licensed in Wisconsin. This may be a verbal order so long as there is a corresponding signed order entry in the patient chart or computer file. Orders require the signature of the licensed practitioner.

## Use of Mobile or Portable Machines

* 1. DHS 157 defines mobile x-ray equipment as mounted on a permanent base with wheels and/or casters for moving while completely assembled; portable x-ray equipment is defined as hand-carried. Battery-operated, hand-held dental x-ray devices must be approved by DHS prior to use. When hand-held intraoral units are used, the backscatter shield must be in place as close to the patient as possible. Approved battery-powered dental x-ray devices are exempt from the 2 meter safety distance rule and from wearing the lead apron requirement when manufacturer specifications are followed, i.e., use of the back scatter shield.
	2. The x-ray machine operator must be positioned so that his/her exposure to scatter radiation is as low as reasonably achievable (ALARA). \*The operator shall remain 2 meters (6.5 feet) or more away from the tube and patient unless behind a barrier. The operator should never be in line with the direct beam.
	3. If the x-ray machine operator must be closer than 2 meters (6.5 feet) from the patient or tube, the operator must wear a lead apron.
	4. No person may hold the x-ray tube housing during the exposure. A stand or other means of support shall be used during the exposure. There is the possibility of electric shock from improper grounding if the machine is held.