



Radiation Control
X-ray Unit
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Facilities with Dental X-ray Equipment



Shielding Plans

- MDH requires facilities installing cone beam computed tomography (CBCT), panoramic, or cephalometric x-ray equipment to submit a shielding plan to MDH prior to new construction, structural remodeling, or if the equipment is new to the facility
- If you are a registrant that has x-ray rooms/areas that were constructed, structurally remodeled, or placed into use prior to February 2008, you are responsible for compliance with Minnesota Rules, Chapter 4732.0220, subpart 3. All facilities must have a shielding plan or radiation survey onsite.

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Shielding Requirements

You are responsible for protecting your staff, your patients and the public from unnecessary radiation. MDH has requirements for the design of an x-ray room/area to ensure that you have met the minimum protection requirements.

[Minnesota Rules, Chapter 4732.0360](#) establishes requirements for shielding plans to be completed and submitted to MDH after February 5, 2008 for the following:

1. New construction of an x-ray room/area
 - This includes rooms/areas that were not originally designed for x-ray use and are now used routinely or permanently
2. Structural remodel of an existing x-ray room/area
 - Removal or remodeling of existing exterior walls, ceiling, floor, or control booth of a room or area
3. Shielding plan forms and additional information may be found on the MDH X-ray website in the Topic Index, under Shielding

If your x-ray room/area was constructed prior to February 5, 2008, you were not required to submit a shielding plan to MDH. However, you were required to perform a radiation survey or radiation shielding evaluation of your room/area to ensure that staff and the public are protected from unnecessary radiation and the dose received are not in excess of the limits identified in this guide.

Rooms/Areas Constructed Prior to February 2008

1. If you are a registrant that has purchased a facility with existing x-ray rooms/areas that were constructed, structurally remodeled, or placed into use prior to February 2008, you are responsible for obtaining shielding documentation from the previous owner to ensure compliance with Minnesota Rules, Chapter 4732.0220, subpart 3.
2. The requirements for registrants that had x-ray rooms/areas that were constructed, structurally remodeled, or placed into use prior to February 2008 were regulated under Minnesota Rules, Chapter 4730.1670, subpart 1, adopted in 1993. Requirements for shielding under Minnesota Rules, Chapter 4730 state that a registrant needs to perform a radiation survey at the time of initial installation of x-ray equipment and after any change in the facility or equipment which might cause a change in radiation hazard.



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MDH does not develop, approve or maintain records of shielding plans for registrants.

Minnesota Rules, Chapter 4732.0220, subpart 3 requires all registrants maintain documentation of the radiation shielding installed in their facility. The documentation must include:

1. A blue print or architectural drawing indicating installed shielding.
2. A shielding plan that was completed by a service provider or an appropriate radiological physicist registered in Minnesota
 - The actual structural composition and thickness or lead equivalent of all walls, doors, partitions, and, if occupied spaces above or below, the floor and ceiling of the rooms concerned
3. Calculations to ensure occupational staff and the public do not receive a dose in excess of the dose limits found in:
 - Occupational, [Minnesota Rules, Chapter 4732.0410](#)
 - Embryo or Fetus, [Minnesota Rules, Chapter 4732.0415](#)
 - Exposure to minors, [Minnesota Rules, Chapter 4732.0420](#)
 - Members of the public, [Minnesota Rules, Chapter 4732.0430](#)

OR

4. If shielding compliance can't be verified by all the above, a detailed radiation survey covering the radiation levels at the operator position and at pertinent points outside the room during normal operation must be completed.

When a shielding plan has been completed and submitted, a permanent placard must be mounted in the room/area identifying the amount and type of shielding in the room/area

A placard must be mounted in the x-ray equipment room/area specifying the amount and type of shielding in all walls, doors, partitions, and, if occupied, spaces above or below the floor and ceiling.

- If mounting the shielding information is not practical, you may post a notice in the room/area that describes the document and states where it may be examined
- The placard is to remain in the room/area until the room/area is destroyed or remodeled at which time a new shielding plan must be completed and submitted if the room/area is to be used for x-ray purposes
- The placard must be mounted in a manner that the placard cannot easily be removed, defaced or destroyed
- In the event the placard is removed, defaced or destroyed, you must replace the placard

Example placard when shielding information is placed directly on the placard:

Radiation Shielding for Room 101
Control Room Wall contains 1/16 inch lead
North Wall contains 1/16 inch lead
East Wall contains 1/32 inch lead
South Wall contains 1/32 inch lead
West Wall contains 1/32 inch lead
Ceiling contains 4 inches concrete on metal deck
Floor is concrete on slab (unoccupied)