

CHAPTER 4730
DEPARTMENT OF HEALTH
IONIZING RADIATION

4730 1510 REGISTRANT'S SAFETY
REQUIREMENTS

4730 5000 APPLICABILITY

4730 5050 DEFINITION

4730 5100 EXAMINATION REQUIREMENTS

4730 5200 REQUIREMENTS FOR FACILITIES
USING X-RAY EQUIPMENT

4730 5400 EQUIVALENT EXAMINATIONS

4730 5500 INDIVIDUALS OPERATING X-RAY
EQUIPMENT DURING TRAINING

4730.1510 REGISTRANT'S SAFETY REQUIREMENTS.

[For text of subs 1 and 2, see M.R.]

Subp. 3. **Individuals who may apply radiation.** Only those individuals who are licensed practitioners of the healing arts, or individuals who have successfully passed an examination specified in parts 4730.5000 to 4730.5500 and who are under the direct supervision of a licensed practitioner of the healing arts, may intentionally apply radiation to an individual.

[For text of subs 4 to 13, see M.R.]

Statutory Authority: *MS s 144.121*

History: *21 SR 916*

4730.5000 APPLICABILITY.

Except for an individual licensed under Minnesota Statutes, chapter 147, 150A, or 153, or sections 148.01 to 148.106, and rules adopted thereunder, after January 1, 1997, an individual operating X-ray equipment for use on humans must pass an examination as specified in parts 4730.5000 to 4730.5200 or part 4730.5400.

Statutory Authority: *MS s 144.121*

History: *20 SR 2777; 21 SR 916*

4730.5050 DEFINITION.

For purpose of parts 4730.5000 to 4730.5500, "individual operating X-ray equipment on humans" means an individual who exposes humans to ionizing radiation by being directly involved with any part of the X-ray procedure from setting the equipment exposure factors through processing the X-ray.

Statutory Authority: *MS s 144.121*

History: *20 SR 2777*

4730.5100 EXAMINATION REQUIREMENTS.

Subpart 1. **General.** To be approved by the commissioner, an examination must test an individual's knowledge of:

- A. basic radiation safety;
- B. proper use of X-ray equipment;
- C. darkroom and film processing; and
- D. quality assurance procedures.

Subp. 2. **Examination approval.** A set of examination questions based on the areas listed in subpart 1 must be submitted to the commissioner for approval:

- A. at least 60 calendar days before the examination is held;
- B. before the initial examination is used; and
- C. whenever question content is changed or additional questions are added to the question pool.

Subp. 3. **Availability of examinations.** An examination must be offered at least three times each calendar year.

Subp. 4. **Reporting examination results.** Within 30 calendar days after an examination has been administered, a list of all individuals who have passed the examination and

those who have failed the examination must be submitted by the organization administering the examination to the commissioner.

Subp. 5. **Notice to individual.** Written notice to the individual who took the examination on a specific date must be provided by the organization administering the examination within 30 calendar days:

- A. indicating whether the individual passed or failed the examination; and
- B. listing the areas in which the individual failed.

Subp. 6. **Examination security.** The identity of an individual taking the examination must be verified by requiring a picture identification at the time the individual takes the examination.

Subp. 7. **Passing level.** The passing level for an examination must be 70 percent.

Subp. 8. **Closed book examination.** An examination must be a closed book examination.

Subp. 9. **Validity standards.** An examination must meet validity standards for educational and psychological testing specified in the American Psychological Association's "Standards for Educational and Psychological Testing" (1986). The "Standards for Educational and Psychological Testing" are incorporated by reference, are not subject to frequent change, and are available at the Minnesota State Law Library.

Subp. 10. **Examination questions.** An examination must:

- A. consist of at least 75 multiple choice questions;
- B. include the highest percent of questions on radiation safety; and
- C. vary and reorder questions each time an examination is held.

Subp. 11. **Examination content.** An examination must adequately address the topic areas listed in subpart 1. Questions for each of the topic areas listed in subpart 1 must include the information specified in items A to D:

A. radiation safety, including:

- (1) the biological effects of radiation.
 - (a) somatic and genetic effects; and
 - (b) long-term and short-term effects;
- (2) operator protection.
 - (a) patient protection; and
 - (b) gonad and room shielding and the use of lead aprons and gloves;
- (3) beam restriction methods;
- (4) personnel monitoring:
 - (a) types of monitors available; and
 - (b) how to wear monitors;
- (5) dose:
 - (a) maximum permissible dose for patient and operator; and
 - (b) the concept of "as low as reasonably achievable" (ALARA);
- (6) radiation terminology:
 - (a) meanings; and
 - (b) proper use; and
- (7) restraint and holding procedures and precautions;

B. the proper use of X-ray equipment, including:

- (1) radiographic equipment;
- (2) the parts of the X-ray machine and X-ray tube;
- (3) the electronics and physics of X-ray generation;
- (4) grids and buckys;
- (5) automatic exposure controls;
- (6) identification of imaging failures;
- (7) proper maintenance of X-ray equipment;

- (8) image production;
- (9) technique factors:
 - (a) kVp, mA, mAs time and distance;
 - (b) function and interaction of kVp, mA, mAs time, and
 - (c) density, detail, contrast;
- (10) cassettes and film compatibility; and
- (11) technique conversion factors;
- C. darkroom and film processing, including:
 - (1) both automatic or manual chemistry;
 - (2) fog;
 - (3) temperature and time relationship;
 - (4) identification of artifacts;
 - (5) handling and storage of film, chemistry, and replenishing;
 - (6) safelights types, wattage, and compatibility with film; and
 - (7) darkroom maintenance;
- D. quality assurance procedures, including:
 - (1) the importance of quality assurance procedures;
 - (2) how to do quality assurance procedures for sensitometry and densitometry, screen tests, and fog test; and
 - (3) what corrective measures are appropriate.

Statutory Authority: *MS s 144.121*

History: 20 SR 2777

4730.5200 REQUIREMENTS FOR FACILITIES USING X-RAY EQUIPMENT.

A registrant in a facility with X-ray equipment used on humans must ensure that:

A. only an individual who has met the requirements in parts 4730.5000 to 4730.5200 or 4730.5400 is allowed to operate X-ray equipment; and

B. on request of the commissioner, written verification that the individual who operates X-ray equipment has met the requirements in parts 4730.5000 to 4730.5200 or 4730.5400 is available for inspection.

Statutory Authority: *MS s 144.121*

History: 20 SR 2777

4730.5400 EQUIVALENT EXAMINATIONS.

Subpart 1. **General.** An individual shall be determined by the commissioner to have met the requirements in parts 4730.5000 to 4730.5200 if the individual has passed any of the examinations listed in this part.

Subp. 2. [Repealed, 21 SR 916]

Subp. 3. [Repealed, 21 SR 916]

Subp. 4. [Repealed, 21 SR 916]

Subp. 5. **Radiologic technologist registration examination.** If an individual has passed the radiography examination of the American Registry of Radiologic Technologists, the individual shall be determined to have met the requirements in parts 4730.5000 to 4730.5200.

Subp. 6. **Chiropractic radiologic technologist registration examination.** If an individual has passed the radiography examination of the American Chiropractic Registry of Radiologic Technologists, the individual shall be determined to have met the requirements in parts 4730.5000 to 4730.5200.

Subp. 7. **Radiologic technologist license from other United States jurisdictions.** If an individual has passed a full or limited license examination in radiography from other United States jurisdictions, the individual may request that the commissioner review the license examination to determine if the license examination is equivalent to the examination

described in parts 4730.5000 to 4730.5200. If the examination meets the requirements of part 4730.5100, the individual shall be determined by the commissioner to have met the requirements of part 4730.5000.

Subp. 8. Other professional registrations. If an individual has passed a registration examination other than one specified in this part, or an examination not approved under part 4730.5100, the individual may request a determination of equivalency according to the procedures and criteria in parts 4717.7000 to 4717.7050.

Statutory Authority: *MS s 144.121*

History: *20 SR 2777; 21 SR 916*

NOTE. Subparts 2, 3, and 4, adopted at 20 SR 2777 and repealed at 21 SR 916, read as follows

"Subp. 2 Licensed dental hygienist examination If an individual has passed the examination for the Minnesota dental hygienist license, the individual shall be determined to have met the requirements in parts 4730.5000 to 4730.5200 if the individual's practice is limited as set forth in part 3100.8700

Subp. 3 Registered dental assistant examination. If an individual has passed the examination for the Minnesota dental assistant registration, the individual shall be determined to have met the requirements in parts 4730.5000 to 4730.5200 if the individual's practice is limited as set forth in part 3100.8500

Subp. 4 Limited dental radiographic registration examination. If an individual has passed the radiographic examination that complies with part 3100.8500, the individual shall be determined to have met the requirements in parts 4730.5000 to 4730.5200 if the individual's practice is limited as set forth in part 3100.8500"

4730.5500 INDIVIDUALS OPERATING X-RAY EQUIPMENT DURING TRAINING.

An individual participating in a training course for physicians, dentists, chiropractors, podiatrists, radiologic technologists, chiropractic radiologic technologists, dental hygienists, or dental assistants is exempt from the requirements of part 4730.5000 for the duration of the training course.

Statutory Authority: *MS s 144.121*

History: *20 SR 2777*