



ADMINISTRATIVE RULES OF MONTANA



37.14.1010 DENTAL RADIOGRAPHIC INSTALLATIONS

- (1) The equipment used in dental radiographic installations shall be as follows:
- (a) The tube housing shall be of diagnostic type.
 - (b) Diaphragms or cones shall be used for collimating the useful beam and provide the same degree of protection as the housing. The diameter of the useful beam at the cone tip shall not be more than 2-3/4 inches for intra-oral radiography.
 - (c) A cone or spacer frame shall provide a target-to-skin distance of not less than 7 inches with apparatus operating above 50 kVp or 4 inches with apparatus operating at 50 kVp or below.
 - (d) For equipment capable of operating up to no more than 70 kVp, the total filtration permanently in the useful beam shall be equivalent to at least 1.5 mm of aluminum. This requirement may be assumed to have been met if the half-value layer is not less than 1.5 mm aluminum at maximum possible operating voltages.
 - (e) For equipment capable of operating above 70 kVp, the total filtration permanently in the useful beam shall be equivalent to at least 2.5 mm of aluminum. This requirement may be assumed to have been met if the half-value layer is not less than 2.5 mm aluminum at the maximum possible operating voltage.
 - (f) Means shall be provided to terminate the exposure at a preset time interval, preset product of current and time, a preset number of pulses, or a preset radiation exposure to the image receptor. In addition:
 - (i) It shall not be possible to make an exposure when the timer is set to a "zero" or "off" position if either position is provided.
 - (ii) With a timer setting of 0.5 seconds or less, the average exposure period (T) shall be greater than or equal to 5 times the maximum exposure period ($T_{\max}$) minus the minimum exposure period ($T_{\min}$) when 4 timer tests are performed, i.e.,
$$T \geq 5(T_{\max} - T_{\min}) .$$
 - (g) An x-ray control shall be incorporated into each x-ray system such that an exposure can be terminated by the operator at any time, except for exposure of one-half second or less.
 - (h) Each installation shall be provided with a protective barrier for the operator or shall be so arranged that the operator can stand at least 12 feet from the useful beam. Stationary x-ray systems installed after July 1, 1980, shall be required to have the x-ray control permanently

mounted in a protected area, e.g., corridor outside the room, so that the operator is required to remain in that protected area during the entire exposure.

- (2) The structural shielding requirements for dental radiographic installations shall be as follows:
 - (a) Dental rooms containing x-ray machines shall be provided with primary protective barriers at all areas struck by the useful beam. Consideration shall be given to the attenuation provided by the patient and the building materials in partitions.
 - (b) When dental x-ray units are installed in adjacent rooms or areas, protective barriers shall be provided between the rooms or areas. Consideration of the effects of the separating wall(s) shall be given in the evaluation of this protection.
- (3) The operating procedures applicable to dental radiographic installations shall be as follows:
 - (a) Neither the dentist nor his assistant shall be permitted to hold patients or films during exposure, nor shall any individual be regularly used for this service.
 - (b) During each exposure, the operator shall stand at least 12 feet from the patient or behind a protective barrier.
 - (c) Only the patient shall be in the useful beam.
 - (d) Neither the tube housing nor the pointer cone shall be hand-held during exposure.
 - (e) Fluoroscopy shall not be used in dental examinations.
 - (f) Personnel monitoring shall be performed in controlled areas for each occupationally exposed individual beyond the required 13-week period, for whom there is a reasonable possibility of receiving a dose exceeding one-fourth the applicable maximum permissible dose.

Authorizing statute(s): Sec. 75-3-201 and 75-3-202, MCA

Implementing statute(s): Sec. 75-3-201 and 75-3-202, MCA

History: NEW, 1980 MAR p. 1069, Eff. 3/28/80; TRANS, from DHES, 1996 MAR p. 433; TRANS, from DEQ, 2000 MAR p. 189.