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To: Dental Facility Registrants

From: David M. Howe, Program Director
Radiation Protection Services

Subject: Clarification of Shielding Requirements and Hand-Held Intraoral X-Ray Use in Dental Facilities

The Center for Health Protection, Radiation Protection Services (RPS) is releasing this informational bulletin to clarify the Oregon Administrative Rules (OARs) regarding x-ray shielding requirements in a dental setting and the utilization of hand-held intraoral x-ray units for routine use.

Machines Requiring a Shielding Study Prior to Use

Prior to use in a dental setting, the following x-ray machine types must have a shielding plan performed by a qualified expert:

1. Panoramic X-Ray
2. Cephalometric X-Ray
3. Cone Beam CT X-Ray

General requirements for the information that must be submitted in a shielding plan is outlined in OAR 333-106-120. RPS inspectors will review shielding plans during routine inspections.

[Note: Intraoral and hand-held x-ray machines are exempt from this requirement].

Clarification of "Protected Area" for Permanently Installed X-Ray Machines: Physical Barriers vs. Distance

During x-ray operations, the exposure switch for the x-ray unit shall be placed in a "protected area" as defined in OAR 333-106-0005(78) and the operator shall remain in that area during the entire exposure.

In most cases a fixed barrier, such as a wall or shielded viewing window, is the most convenient and effective means to shield the primary x-ray beam and associated scatter radiation, although in some cases a fixed barrier is not practical due to facility design constraints.

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According to the National Council on Radiation Protection and Measurements (NCRP) Report No. 177, in absence of a physical barrier, the operator ***shall*** remain at least 2 meters from the machine. Additionally, the operator should be positioned as to not be in line with the primary radiation beam as it exits the patient.

During a routine site visit, the inspector may evaluate the effectiveness of the physical distancing by calculating the average dose received by the operator in the protected area by multiplying the average measured scatter radiation received per exposure by the average number of exposures performed in an hour.

Regardless of the method of protected area utilized, the operator must maintain visual contact with the patient throughout the exposure.

Use of Hand-Held Intraoral X-Ray Devices as a Primary X-Ray Device for General Dentistry

Based on evaluation by RPS staff on the average radiation output of an approved hand-held x-ray unit and their safe and effective use in the dental setting, the agency will now be permitting the use of hand-held x-ray devices as an approved primary x-ray machine that may be used in lieu of a stationary intraoral unit. Informational Bulletin 2010-08 will now be rescinded.

Additionally, the x-ray operator need not wear 0.25 mm lead equivalent apron and thyroid collar during use since an approved hand-held unit is installed with a permanent backscatter shield.

Facilities must ensure that the hand-held devices utilized are Authority-approved and meet the requirements of 333-106-0325(8).

If you need further clarification, please feel free to contact, Radiation Protection Services, Tom Pfahler at (971) 712-6942 or by email thomas.w.pfahleriv@oha.oregon.gov .