



Guideline for Determining the X-ray Shielding Requirements for Panoramic and Cephalometric Facilities

This guideline may be used to determine the shielding required for a new installation or when modifying an existing one, provided the following criteria apply to the installation. Before using the guideline, first read the Explanatory Notes provided. If the following Criteria do not apply, contact the Radiation Protection Services office for assistance. Note: the shielding specified in this guideline is to protect workers outside the x-ray room to the WorkSafeBC Action Level (1 mSv/year) rather than to the Exposure Limit (20 mSv/year). Owners wishing to shield to an exposure level greater than 1 mSv/year outside the room should not use this guideline and should be aware of the regulatory implication if the Action Level is or may be exceeded.

Criteria

- The x-ray unit is either a Panoramic unit OR a Panoramic and Cephalometric unit operated in the range 70kVp to 100 kVp.
- The room containing the unit has minimum dimensions as follows:
 - (a) for panoramic units, at least 1.2m x 2.5m
 - (b) for Panoramic/Cephalometric units, at least 1.5m x 2.5m
- The x-ray workload (number of film exposures) per week does not exceed: a) 50 for a panoramic unit only, and b) 50 for a panoramic and cephalometric unit, in the room.
- Unexposed x-ray film is stored outside the room or inside a film bin that is lined with at least 0.8mm (2 lb/ft²) lead.
- Shielding is required to provide protection outside the room, a) for workers to meet the Action Level of 1mSv/year, as specified in the WCB Occupational Health and Safety Regulation (see the WSBC website: <http://www2.worksafebc.com/Publications/OHSRegulation/Home.asp>) and for members of the public not to exceed the recommended public dose limit of 1 mSv/year.
- Occupancy behind barriers: the shielding assessment (over) has taken into account the amount of time (occupancy) spent by persons outside the barriers (i.e. walls/doors)
 - **Full occupancy** applies to areas occupied by workers or other persons for a total of more than 30 minutes per day, and applies to adjacent rooms and tenanted facilities.
 - **Partial occupancy** applies to areas occupied by workers and other persons for a total of no more than 30 minutes per day, and applies to areas such as adjacent stairwells, parkades and parking lots, lanes, gardens and infrequently used rooms (storage). Areas that can be converted from **Partial Occupancy** to **Full Occupancy** (e.g. from storage to office) should be considered as **Full Occupancy** for shielding requirements.

If your facility design and use meets the above criteria, you can use the shielding information (over) to determine the thickness of materials required for the barriers. Complete the assessment and provide a copy to the responsible person carrying out the installation.

N.B. Building plans are NOT required to be submitted to the Radiation Protection Services.

(over)



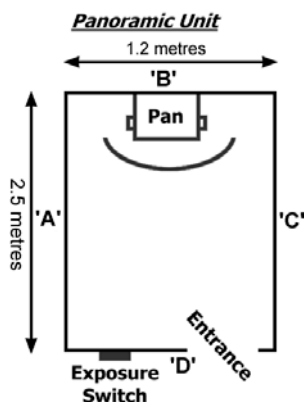
Table 1: Shielding for only Panoramic Unit (Diagram 1 below)

Area	Shielding For Up To 50 Exposures Per Week	Check <input checked="" type="checkbox"/> one per Area
Exposure Switch Location/Wall 'D' (1 mSv/year)	2.5 cm (1") standard drywall construction	<input type="checkbox"/>
Walls Labeled 'A', 'B' and 'C' (1 mSv/year)	2.5 cm (1") standard drywall construction	<input type="checkbox"/>
Entrance Door Partial Occupancy (1 mSv/year)	No shielding required.	<input type="checkbox"/>

Table 2: Shielding for Panoramic/Cephalometric Unit (Diagram 2 below)

Area	Shielding For Up To 50 Exposures Per Week	Check <input checked="" type="checkbox"/> one per Area
Exposure Switch Location/Wall 'D' (1 mSv/year)	2.5 cm (1") standard drywall construction	<input type="checkbox"/>
Wall Labeled 'A' <i>or</i> Full Occupancy (1 mSv/year) Partial Occupancy (1 mSv/year)	2.5 cm (1") standard drywall construction 2.5 cm (1") standard drywall construction	<input type="checkbox"/> <input type="checkbox"/>
Wall Labeled 'B' <i>or</i> Full Occupancy (1 mSv/year) Partial Occupancy (1 mSv/year)	5 cm (2") standard drywall construction 2.5 cm (1") standard drywall construction	<input type="checkbox"/> <input type="checkbox"/>
Wall labeled 'C' <i>or</i> Cassette holder with 0.8 mm lead lining (1 mSv/year) <i>or</i> Cassette holder with no lead lining (1 mSv/year) - Full Occupancy <i>or</i> Cassette holder with no lead lining (1 mSv/year) - Partial Occupancy	2.5 cm (1") standard drywall construction 0.8 mm (2 lb/ft ²) rolled lead to a height of 2 meters (7 ft) and a width of 0.9 meters (3 ft) centered on the wall behind cassette holder with the primary beam 2.5 cm (1") standard drywall construction	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Door/Entrance & Wall labeled 'D' (1 mSv/year)	No shielding required	<input type="checkbox"/>

Diagram 1



Dental Facility Name & Address:

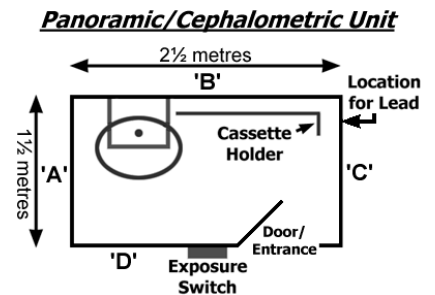
Number of Exposures per Week: Pan: _____ Ceph: _____

Date: _____

Signed: _____

Name: _____

Diagram 2



Keep a copy of this signed document on record for future reference/inspection. Attach a copy of room plan showing adjacent areas and their function with this document.