RADIATION SAFETY AND NUCLEAR SECURITY AUTHORITY

Key Requirements for Diagnostic X-Ray Facility

Design of diagnostic x-ray facility

1. The facility should be designed for any planned exposure that may results from the conduct of the practice to be kept as low as reasonably achievable and not to exceed the following dose constraint levels:

Category	Dose Constraint Level
Radiation Worker	6 mSv/year
Member of the Public*	0.3 mSv/year

* *A non-radiation worker is also considered as a member of the public*

The diagnostic x-ray room

2. The diagnostic x-ray room should be located as far as practicable away from high occupancy areas.

3. The diagnostic x-ray room should not be used for more than one radiological procedure at a time, unless specifically designed for this purpose.

4. The equipment should be positioned so that the primary radiation beam is not directed at the operator's console, windows, doors, or any high occupancy areas.

5. There should be a lock system in place to ensure a controlled access to the x-ray room and to prevent any inadvertent entrance to the room during exposure.

Shielding of the diagnostic x-ray room

6. The boundaries of the diagnostic x-ray room to all occupied areas (walls, doors, doorframes, floor, ceiling, windows and window frames) and the operator's console should be shielded appropriately to meet requirement 1 above.

7. The shielding requirements of the boundaries of the diagnostic x-ray room should be determined through comprehensive dose calculations, with due consideration to the size of the x-ray room, occupancy of the surrounding areas and the anticipated workload of the diagnostic x-ray equipment. Generally, a shielding of 2 mm of lead equivalence of all boundaries of the x-ray room would be sufficient. The shielding of the walls of the x-ray room should be from the floor level to a height of not less than 2.2 m.

8. Any perforation in the boundaries of the diagnostic x-ray room, for electrical conducts, air conditioning etc., should not compromise the integrity of the shielding.

Operator's Console

9. The operator's console area should be located so that it is adjacent to the staff entrance door and should allow for the operator to have a clear panoramic view of the patient and the access doors to the diagnostic x-ray room.

10. The distance between the operator's console and the patient table/Chest Bucky should not be less than 1 m.

11. The operator's console area should be positioned and shielded in such a manner that radiation is scattered at least twice before entering the protective area. The protective screen should extend from the floor level to a height of not less than 2 m and of sufficient width (not less than 90 cm) to allow at least two people to stand behind the screen during an exposure to protect the operator from leakage radiation from the tube housing and scattered radiation from the patient.

12. There should be a protective window of dimensions not less than 30 cm x 30 cm with at least 2 mm lead equivalence, within the protective screen, for the operator to observe the patient during an x-ray exposure.

Dimensions of the diagnostic x-ray room

13. The diagnostic x-ray room should not be less than 18 m^2 for general purpose radiography and conventional fluoroscopy equipment. Also, any single dimension of the x-ray room should not be less than 4 m.

Warning signs/lights

14. Appropriate radiation warning signs should be posted on access doors to the diagnostic x-ray room.

15. Radiation warning lights should be positioned at all access doors to the diagnostic x-ray room. The warning lights should be positioned at conspicuous locations outside the x-ray room, and the lights should be illuminated during exposure.

16. Pregnancy signs should be displayed in the waiting area advising female patients to declare their known or suspected pregnancy prior to undergoing a radiological examination.

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