

What are the basic requirements of a single X-ray imaging system?

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1. No X-ray unit shall be commissioned unless the layout of the proposed installation is approved and the unit is registered with the Competent Authority. Commissioning/operation of any X-ray installation without layout approval and registration with competent Authority is punishable offence under the Atomic Energy Act, 1962.

2. All diagnostic X-ray installations may be under the direct control of a Radiologist and shall be operated by a qualified Radiographer. A Radiologist is compulsory for fluoroscopy and where more than 2 machines are in use.

3. **The X-ray machines:**

1. The unit must be '**Typed approved**' by AERB (This is to be ensured from the supplier before purchase)

2. Must be installed in an **approved room** (Get layout approved by DRS prior to installation)

3. Must have light beam and X-ray collimation

4. Filtration : Total 2.5mm of A1 above 100KV (1.5mm permanent filtration)

: Total 2.0mm of A1 up to 100KV (1.5mm permanent filtration)

1. Cable length > 2m to enable operation from a minimum distance of 3 meters from the x-ray tube.

2. Fluoroscopy: Total filtration 2mm of A1, general.

Protective glass: 2mm Pb up to 100kVp, or increased at the rate of 0.01mm per kVp.

Diaphragm to be limited to leave 1 cm margin on the screen all around

Focus to tabletop distance shall be not less than 30cm for general fluoroscopy.

Fluoro-timer, foot switch etc must be provided.

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1. **Operating Staff:** Radiographer with Diploma in Radiological Technology (DRT/CRA) conducted by Government of Kerala or equivalent (Course conducted by a Medical College or University of duration not be less than 1 year). Courses conducted by different institutions in Kerala other than this are not approved.

2. **Protective devices:**

1. Barrier near control panel : Tri-sectional to cover whole body with minimum Pb equivalence of 1.5mm, including viewing window.

2. Aprons : Minimum 0.25mm Pb equivalent

3. Gloves : Minimum 0.25mm Pb equivalent

4. Gonad shields : Minimum 0.50mm Pb equivalent

5. Cassette pass box : 2.0mm Pb equivalent

6. **Periodic Inspection:** Contact Directorate of Radiation Safety for Quality Assurance check at least once in a year.

7. **Personnel Monitoring Badges :** Personnel Monitoring Badge is mandatory: **Please contact**

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1. **Warning sign:** X-ray warning sign & red light indication must be placed outside the x-ray room.

2. **X-ray room :** Must be situated away from areas of high occupancy

Area : CT Scanner 25.00sqm (5mx5m) No dimensions less than 4.00 meters

X-ray 18.00sqm (4mx4.5) No dimensions less than 4.00 meters

Wall thickness: Wall of the X-ray room must offer adequate protection all around. About **23cm**

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thick brick or stone wall with Cement plastering is alright. Hollow bricks, wood, asbestos etc., are not suitable

Wall behind the chest stand should be **35cms** thick if there is any likely hood of occupancy on the other side of the wall or alternatively give lead backing of

1.0mm

lead sheet on

23cms

thick wall.

Dark Room : Preferably (3mx4m)

Waiting Room : Patient waiting shall be outside the X-ray room

Entrance to the X-ray room : Number of doors for entry to the X-ray room shall be kept minimum. Doors shall be Lead lined with 1.70mm Pb equivalent, including door frame.

Windows/exhausts/AC : At a height of 2m from the ground level outside.

1. The installation/ layout : Should ensure adequate safety of the operator, patient and those waiting outside. The direct beam shall not be directed to an occupied area, control panel, waiting area etc. Get the layout approved before installation and unit registered before commissioning by **DRS**. Apply in the prescribed format with a layout plan and prescribed fees.

2. All special installations like Dental X-ray, Mammography, CT scan, Cath Lab, DSA,

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C-Arm and other special systems require customized planning of all radiation safety aspects. DRS is available for consultation.

3. Contravention of the rules: Punishable under relevant sections of Atomic Energy Act – 1962

4. The requirements listed above are only brief for details please refer: **AERB Safety Code No.SC/MED-2 (Rev.1)**