



DEPARTMENT OF HEALTH
DIRECTORATE: RADIATION CONTROL



GUIDELINES
PROTECTIVE CLOTHING

1. Protective aprons (workers)

The Department has accepted the conditions stated by the International Commission on Radiological Protection (ICRP Publication 57, paragraph 174), namely:

“If workers cannot remain in the protected area when the x-ray machine is operated, they shall wear a protective apron of at least 0.25 mm lead equivalence. As far as is reasonably practicable they should occupy areas of the room where the levels of radiation exposure are low. Any person required standing within 1 metre of the x-ray tube or patient should wear a protective apron of at least 0.35-mm lead equivalence. All such protective clothing should bear an identifying mark and should be examined at 3 *monthly* intervals. Defective items should be withdrawn from use.”

2. Protective gloves (workers)

The Department has also accepted the conditions stated by the ICRP Publication 57 (paragraph 174) regarding protective gloves, namely: “Protective gloves should be of at least 0.35 mm lead equivalence. All such protective clothing should bear an identifying mark and shall be examined at 3 *monthly* intervals. Defective items should be withdrawn from use.”

3. Thyroid shields

The ICRP Publication 57 (paragraph 175) stated namely:

“Thyroid protection, if deemed necessary can be achieved either by wearing a collar of suitable lead equivalence, or by the use of a protective apron with a high neckline.”

3.1 *Patients*

No requirements

3.2 *Radiation workers*

A lead equivalence of 0.35-mm lead is required (in correspondence with ICRP Publication 57, paragraph 174).

4. **Gonad shields**

4.1 *Patients*

Gonad shielding should only be used when it does not interfere with radiographic diagnosis. The gonads of males with reproductive potential must be protected if they are within the primary beam or within 5 cm of it, and if the shielding does not exclude important diagnostic information or interfere with the study. If the gonads are beyond 5 cm the gain obtained in shielding is negligible. The use of gonadal shielding in males can reduce dose to the gonads by 95% when the gonads are in the direct beam. In females the saving is considerably lower (about 50%).

There are three basic types of gonadal shields (contact shield, the shadow shield and the shaped contact shield). These shields must be at least 0.5 mm lead equivalent. Contact shields are the simplest to use and are the least expensive. They are simply pieces of lead sheet or lead rubber or even objects such as lead gloves that can be placed over the gonads. Shadow shields are radio-opaque shields that are placed between the X-ray tube and the patient but are not in contact with the patient. Shaped contact shields are available only for the male.

For female patients shielding of ovaries may obscure structures of clinical importance and must therefore be abandoned. Shielding of the ovaries are recommended only if loss of diagnostic information can be avoided. Due to uncertainty in the location of the ovaries, the real shielding effectiveness cannot always be predicted.

5. Repair of lead aprons, gonad shields, protective gloves and thyroid shields

1. To verify that lead aprons, gonad shields, protective gloves and thyroid shields are free from any defects, holes and cracks;
 - 1.1 A visual and manual check must be performed 3 monthly, and
 - 1.2 A radiographic / fluoroscopic test if a defect is suspected.
2. Damaged lead aprons, gonad shields, protective gloves and thyroid shields should be withdrawn from use. It may be repaired provided that it is restored to its original shielding ability.

Any supplier of lead aprons, gonad shields, protective gloves and thyroid shields should be able to assist the user with regard to the repair thereof.

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References:

ICRP Publication 34

ICRP Publication 57