



Radiation Protection Training

*Working Alongside Ionising Radiation
at DHUFT*

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Aims

The aims of this presentation will be to cover:

- Introduction to ionising radiation (X-Rays) and legislation
- How to identify where radiation is used in the hospital environment
- Working in an area that uses ionising radiation
- Personal protective equipment (PPE)

Sources of Ionising Radiation in Hospitals

- **X-Ray Machines**

- **X-Ray machines emit radiation** - but can only do so when power is switched on and when the exposure button is being operated. When power is disconnected from the machine it is completely safe.

- **C-Arms/Image Intensifiers**

- **These are X-Ray machines used in theatre to guide the practitioner.** They only emit radiation when power is switched on and when the exposure button is being operated. When power is disconnected from the machine it is completely safe.

Ionising Radiation Legislation

There are two main bodies of legislation that govern the use of X-Rays in medicine that all staff working alongside ionising radiation should be aware of.

- **Ionising Radiation Regulations 2017 (also known as “IRR17”)** - aimed at the protection of the public and health of staff who work with X-Rays.
- **Ionising Radiation (Medical Exposure) Regulations 2017 (also known as “IRMER”)** – all to do with ensuring that the right patient gets the right examination and that the examination is carried out and reported by appropriately trained members of staff.

Ionising Radiation Regulations 2017

Covered under this legislation are the following subjects:

- Ensuring that the walls/doors of the X-Ray room provide enough protection to members of the public who may be seated or walking by outside.
- Ensuring that the equipment is used in a safe manner – all radiographers must abide by the “Local Rules” – how to work safely in an X-Ray room.
- Staff dosimetry service must be provided as appropriate.

Ionising Radiation (Medical Exposure Regulations 2017

- Subjects covered and terminology that you should be aware of include the following:
 - Patient identification procedures **must** be followed. Staff should ensure there is sufficient patient information on the form for this to happen (Name, DOB, Address and Hospital number). The form should be returned to the **Referrer** if this is not the case.
 - The **Referrer** – those who request the examination (can be medical or non-medical – if they are non-medical are they authorised? There is a list on the Shared Drive).
 - The **Operator** – those who carry out any practical aspect of the exposure.
 - The **Practitioner** – those who “Justify” the examination – weighs up the risks of the procedure (dose of X-Rays) with the benefits (the diagnosis).
 - Under IRMER, the patient dose for each examination should be recorded.
 - Each radiation exposure should have a written outcome (either radiologist/radiographer report or outcome written in patients notes.
 - Servicing and regular testing of X-Ray equipment must take place.

DHUFT Policies Regarding Ionising Radiation

These policies are specific to DHUFT and can be found on DORIS:

- ONE DORSET IR(ME)R Policy including the Employers Procedures in accordance with the Ionising Radiation (Medical Exposure) Regulations 2017
- ONE DORSET Radiation Safety Policy
- Radiology Use of Lead Policy

Each X-Ray department will also have its own local policies:

- Local Rules
- Standard Operating Procedures

How to identify where Radiation is used in the Hospital Environment

- X-Ray Rooms
 - You can identify an X-Ray room by signs on the door similar to the examples below. Each X-Ray room is known under IRR17 as a Controlled Area.





X-Ray Rooms

You can tell the state of an X-Ray machine from the warning light outside the room.

Warning lights OFF	The X-Ray unit is off and there is no radiation hazard.
Yellow light ON	The unit is ready for use.
Red light ON	The unit is emitting X-Rays.

If the red light is ON, you must not enter the room.

If you need to speak to a member of staff working within an X-Ray room, ensure that you do not open the main entrance doors if they are shut as the radiographer may be about to make a radiation exposure. Knock on the doors to the X-Ray room and wait for the radiographer to acknowledge you, or if there is one, use the viewing area attached to the X-Ray room. This approach ensures that you are not entering straight into the Controlled Area where radiation exposures occur.

How to identify where Radiation is use in the Hospital Environment

X-Ray equipment may also be used in theatres at various sites.

- You can identify when radiation is being used in theatre by a sign similar to the example below.
- The whole of the theatre will be designated as a Controlled Area when the equipment is switched on under IRR17 and as such has restricted access.

You should not enter the Controlled Area at any time without wearing appropriate personal protective equipment (PPE).

If you need to speak to a member of staff within the theatres whilst X-Rays are being used, please knock on the door and wait for a member of staff to acknowledge you. Alternatively, please wear the appropriate PPE **prior to entering the theatre.**



Radiation
Controlled
Area

No
entry

X-rays
Risk from
external
radiation

except
authorised
persons

Radiation Protection Supervisor

Telephone _____

Personal Protective Equipment (PPE)

Ionising Radiation Regulations 2017 (IRR17) state:

- Every employee for whom personal protective equipment is provided **MUST**:
 - make full and proper use of any such personal protective equipment;
 - immediately report to the employer who provided any such personal protective equipment any defect they discover in that equipment; and
 - take all reasonable steps to ensure that any such personal protective equipment is returned after use to the accommodation provided for it (i.e. hang it up correctly).



Personal Protective Equipment (PPE)

Lead should fit you correctly. Check:

- Is it long enough? It should finish just above your knee
- Does it completely cover your sides?

There are size labels on every lead apron (see examples below). If the one you have chosen does not fit, please find one that does. Belts and supports are available if you suffer with any back problems and need to wear lead.



Personal Protective Equipment (PPE)

PPE can be cleaned using plain soap and water.

It is your responsibility to ensure your lead is clean after use.

Each lead should be hung up properly after the theatre case has ended.



Personal Protective Equipment For Diagnostic X-ray Use

Caring for your PPE

Looking after your PPE is important for your safety

Hanging

Hang up PPE after use
Use designated hangers
Hang by both shoulders
One garment per hanger



PPE can crack if not stored properly

No folding
No rolling
No draping



Environment

Use suitable areas to store PPE
Has sufficient hangers
Is cool
Is dry



Extreme temperatures can damage PPE

No bright sunlight
No direct heat
No direct cold



Cleaning

Keep your PPE clean and ready to use

Use suitable cleaning products
Clean stains immediately
Keep a cleaning log
Use a sponge



Incorrect cleaning can damage PPE

No immersion
No bleach



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Pregnancy and Working Alongside Ionising Radiation

- If you find out you are pregnant and work alongside radiation in your job role, please refer to the ONE DORSET IR(ME)R Policy including the Employers Procedures in accordance with the Ionising Radiation (Medical Exposure) Regulations 2017 for guidance.
- Alternatively, seek advice from either of the nominated persons mentioned on the last slide.

Radiation Protection Personnel

- Every X-Ray department will have a nominated:
 - Radiation Protection Advisor (RPA)
 - This position is required by the Ionising Radiation Regulations 2017. The RPA has the expert knowledge to be able to advise management on how to adhere to the radiation legislation.
 - Radiation Protection Supervisor (RPS)
 - This position is also required by the Ionising Radiation Regulations 2017. It is the responsibility of the RPS to ensure that all persons working within an X-Ray department comply with Local Rules. They are the “go to” person for day to day issues involving ionising radiation.

Working Alongside Ionising Radiation (X-Rays) at DHUFT

If you have any further questions regarding radiation and working alongside it please contact:

Suzanne Holloway, Radiology Manager DHUFT
suzanne.holloway@nhs.net

or

Speak to a Radiographer or the Radiation Protection Supervisor at your local DHUFT site.