Radiation Protection Service

DEPARTMENT OF WELLBEING, SAFETY AND HEALTH

UNIVERSITY OF LEEDS

Management of sources of ionising radiation

Standard

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Scope

This Standard deals with the management of all sources of ionising radiation and sets out the University's 'due diligence' approach to the relevant statutory requirements. It applies to work with sources of ionising radiation that is controlled by the university and includes work with open or sealed radioactive sources and x-ray equipment.

Definition

Ionising radiation is radiation in the form of particles or electromagnetic waves that have sufficient energy to cause ionisation (produce ions) when they interact with matter.

Sources of ionising radiation include radioactive material (both artificial and naturally occurring) and electrical equipment that emits radiation (e.g. x-ray machines).See guidance for full definitions and acronyms.

Standard

The University expects that:

Statutory notifications, registrations, consents, permits and reporting

- The required notification and registrations of work with ionising radiation are made to, and consents for specified working practices are obtained from the regulatory authority (HSE).
- The necessary permits allowing the use and disposal of radioactive material are obtained from the regulatory authority (Environment Agency) and all limitations and conditions therein are complied with.
- Statutory reporting requirements are fulfilled.
- Statutory notifications of incidents to the police and regulatory authorities are made.

People

- The following people are appointed:
    - A Radiation Protection Adviser (RPA) to advise the university on compliance with statutory requirements.
    - A Radioactive Waste Adviser (RWA) to advise the university on compliance with its environmental permit for the disposal of waste.
    - A Radiation Protection Manager (RPM) to manage radiation protection in the university.
    - Radiation Safety Coordinators (RSCs) for all faculties using ionising radiation.
    - Radiation Protection Supervisors (RPSs) for all groups using ionising radiation.
- RSCs, RPSs, and radiation users are given training as identified in the training matrix, and this is recorded.
- All radiation users are authorised and records are retained.

Management of work

- Best Available Techniques are used to minimise the radiological effects of the use of radiation on people and the environment.
- Dose constraints are established to limit workers' exposure and all radiation work is optimised so that doses are kept as low as reasonably practicable.
- Risk assessments are completed for all uses of ionising radiation.
- Each group is authorised to use ionising radiation by the RSC and RPM.
- Each group completes a 'Local rules' document using the pre-filled template provided by the RPM that includes emergency procedures and all instructions are followed.
- Audits and annual inspections are undertaken.
- Accidents and incidents are reported immediately to the RPS, RSC or RPM and details subsequently entered on the University's online accident reporting system, Sentinel.

- Personal dosimetry is issued as specified in the local rules and must be used and returned for analysis as specified.
- Dose action levels are established and investigations undertaken as specified in the local rules.
- Radiation monitoring equipment is used as specified in the local rules and is calibrated annually.

Facilities

- The RPM and RPA are consulted when planning any new facilities or any modification of existing facilities for ionising radiation.
- Each radiation area is registered with and designated by the RPM.
- Formal commissioning checks are carried out and approval obtained from the RPM before any new facilities for using ionising radiation are first used.
- All designated ionising radiation areas are provided with access control arrangements in line with the 'Access to Restricted Locations' protocol and restricted to those who hold an ionising radiation work authorisation or are otherwise authorised by the RPS or RSC.
- Only signage approved by the RPM is used.

Material and equipment

- Approval is obtained from RSC or RPM before any radioactive material or radiation equipment is ordered or brought onto university premises.
- Formal commissioning checks are carried out and approval obtained from the RPM before any new equipment designed to emit ionising radiation is first used.
- Statutory records are kept of all radioactive sources as detailed in specific sections below.
- All radioactive material is stored securely in line with the University's permit and local rules.
- All radioactive material is clearly marked with appropriate warning labels and identification.
- Waste and redundant sources are disposed of in accordance with local rules and group limits.
- Radioactive material is only transported off campus under the supervision and control of the RPM and following the 'Transport of Radioactive Material' procedure.

In addition specific requirements for open sources of ionising radiation:

- Each user is registered and holds a valid permit to use radiation.
- Stock and waste limits set by the RPM for each group are not exceeded.
- The use of radioactivity is justified.
- Dose assessments are completed for each nuclide / technique.
- Full details of all open sources of ionising radiation (stocks), all aliquots and all waste disposals are recorded at the time they are ordered / arrive / are created / disposed of.
- Contamination monitoring is carried out in accordance with local rules and is recorded.

In addition specific requirements for sealed sources of ionising radiation:

- Each source has a nominated person responsible for supervising its safe keeping and use.
- Each user is authorised to use the sealed source and their name recorded on the authorised users list in the local rules.
- Full details of each sealed source are registered with the RPM and authorisation is obtained from the RPM prior to it being ordered / acquired.
- Authorisation is obtained from the RPM prior to any sealed source being moved from its registered location.
- A monthly report is made to the RPM on the condition and location of each sealed source.
- Each sealed source is checked and leak tested by the RPM on an annual basis.
- Redundant sources are transferred or disposed of by the RPM.

In addition specific requirements for radiation generators:

- Each user is authorised to use the radiation generator and their name recorded on the authorised operators list in the local rules.
- Full details of all radiation generators are notified to the RPM and authorisation is obtained from the RPM prior to it being ordered / acquired.
- In order to restrict exposures to ionising radiation all radiation generators have engineering controls, design features, safety features, and warning devices that comply with legal requirements and international standards.
- All radiation generators are subject to a 'Critical Examination' by the installer that ensures that safety features and warning devices operate correctly and that there is sufficient protection for persons from exposure to radiation.
- A further critical examination is carried out by the RPM before any radiation generator is first used, on an annual basis thereafter, and if the equipment or safety features are modified.