PRIFYSGOL
BANGOR
UNIVERSITY

SEALED RADIATION SOURCES
HEALTH AND SAFETY POLICY

Date	Purpose of Issue / Description of Change	Equality Impact Assessment Completed
6th March 2024	Reviewed by the Radiation Health and Safety Sub Committee	
21st March 2024	Reviewed and approved by the Health, Safety and Emergency Management Committee	

Policy Officer	Senior Responsible Officer	Approved By	Date
Head of Health & Safety	Radiation Protection Officer	HSEMC	21st March 2024

This Policy will be reviewed in 2027

1. INTRODUCTION

This document describes Bangor University's Policy for ensuring the safety of staff, students, contractors and any other personnel who may be exposed to ionising radiation arising from sealed sources.

By law the University must ensure that:

- Procedures and protocols are in place to ensure all statutory duties are discharged.
- Radiation doses achieved are as low as reasonably practicable (ALARP).

2. POLICY STATEMENT AND SCOPE

It is the policy of Bangor University, so far as is reasonably practicable, but in accordance with the relevant statutory requirements and good practice, to ensure the health and safety of staff, students and visitors to the University.

This Policy states University policy to ensure the safety of staff, students, contractors and any other personnel who may be exposed to sealed sources of ionising radiation. It details how the University manages the use of sealed sources to protect both personnel and the environment.

The requirements of this Policy must be followed by all Colleges handling sealed sources of ionising radiation and Professional Services who may, because of the services they provide, encounter sealed sources of ionising radiation, in addition to all guidance given by the University's Radiation Protection Advisor (RPA), Radiation Waste Advisor (RWA) and Radiation Protection Officer (RPO).

Section 5 contains the University's formal Ionising Radiation Policy Statement.

The Policy applies to:

- Each College and Professional Service.
- Staff, students and maintenance personnel.
- All sealed sources of ionising radiation.

The Policy does not apply to:

- Sealed sources embedded within smoke detectors.
- Radon*.
- X-Rays*.
- Open sources of radiation*

** Dealt with by other specific Policy Standards.*

3. RELATED POLICIES AND LEGISLATION

In addition to those general duties in law, the University and its constituent Colleges and Services, have obligations under the following items of legislation that relate to the use of Ionising Radiation:

- Environmental Permitting Regulations 2016 (EPR 2016).
- The Ionising Radiations Regulations 2017 (IRR 2017).
- Work with Ionising Radiations (IRR 2017) ACOP L121 (second edition).
- Bangor University Policies and Local Rules.

4. DEFINITIONS / TERMINOLOGY

For the purposes of this Policy the following definitions apply:

- Ionising Regulations: This refers to the use of 'sealed sources' of radiation only.
- Sealed Source: A sealed source is defined as a radioactive source containing radioactive material where the structure is designed to prevent, under normal use, any dispersion of radioactive substances. Sealed sources embedded within smoke detectors are not covered by this policy. The University has the following types of sealed sources:

    1) Embedded sealed sources. These are sealed sources, exempted under the Environmental Permitting Regulations (2017) which form part of scientific equipment including liquid scintillation counters and Gas Chromatographs with electron capture detectors. Such sources pose minor risk to users of such equipment and do not need to be kept within designated areas and are not subject to the requirement for Local Rules or supervision by an RPS. **TYPE 1 Source**
    2) PANAX sources used for teaching. Such sources do not need to be kept in a designated area, but users must be supervised by a Radiation Protection Supervisor (RPS) following a written Safe Operating Procedure (SOP). **TYPE 2 Source**
    3) Calibration Sources. Such sources do not need to be kept in a designated area but can only be used by an RPS following a written Safe Operating Procedure (SOP). **TYPE 3 Source**
    4) Non-Embedded Sources exempted under EPR which are not PANAX or calibration sources and are used for experimental purposes. These sources must be used in an area subject to temporary designation as a supervised area following Local Rules approved by the RPO. **TYPE 4 Source**
    5) Category 5 sealed sources. These sources are the most hazardous that may be used within Bangor University. Their use is subject to the conditions set out in permit number EPR/RB3593NK. In addition, they may only be used within a supervised area under the supervision of an RPS and following Local Rules approved by the RPA. At present no such sources are held by the University and there are no plans for their acquisition. **TYPE 5 Source**

- ALARP: As Low As is Reasonably Practicable.

5. UNIVERSITY RESPONSIBILITIES: IONISING RADIATION POLICY STATEMENT

Bangor University is committed to the effective management of ionising radiation. The ALARP principle is applied to all radiation work to ensure employees, students, contractors, visitors and the environment is protected. To ensure doses are ALARP the following controls will be implemented:

a. All work will be carried out in accordance with relevant legislation, in particular:
    - The Ionising Radiations Regulations 2017 (IRR 2017) and supporting ACOP and guidance.
    - Environmental Permitting (England & Wales) Regulations (EPR 2016).
    - Overall responsibility for effective protection against radiation on site lies with the University Council. At the operational level, the Dean of College and Head of Professional Service (where applicable) is responsible for radiation protection within their area of responsibility.

b. The University will ensure the organisation and specific roles as detailed in Section 6 are in place.

c. The University will appoint a *'Qualified Expert'*, Radiation Protection Advisor (RPA) who will be consulted to provide advice to the University on all work with ionising radiation.

d. The University will appoint a *'Qualified Expert'*, Radioactive Waste Adviser (RWA) who will be consulted as necessary to achieve and maintain an optimal level of protection of the environment and population.

e. The University will appoint a Radiation Protection Officer (RPO) to oversee the University's Radiation Protection Supervisors (RPSs).

f. The RPSs will oversee, on a day-to-day basis work with ionising radiation within their areas of responsibility. RPSs are named in the appropriate Local Rules document.

g. In each location where non embedded sealed radiation sources are used, Local Rules, approved by the RPA, will detail arrangements to achieve radiation protection of employees, students, contractors and visitors.

h. All research or teaching, involving the use of non-embedded sealed sources, will be subject to a prior risk assessment to justify its use, identify measures needed to restrict exposure to individuals and any contingency arrangements needed to manage foreseeable accidents and incidents.

i. The Radiation Health and Safety Sub-Committee will provide advice to senior management to ensure the safe use of ionising radiation. The Sub-Committee meets twice annually and in turn reports to the University Health, Safety and Emergency Management Committee.

6. ROLES AND RESPONSIBILITIES

This Section details the specific duties of 'responsible groups / persons' for delivering the environmental and health and safety commitments to ensure compliance with relevant legislation.

These are in addition to the general duties of all employees, students, contractors and visitors to comply with all aspects of Local Rules and other health and safety documents relevant to the area they are working in (or entering):

University Health, Safety and Emergency Management Committee

The Committee receives and acts on reports from various specialist sub-Committees including the Radiation Health and Safety Sub-Committee and is the route by which all health and safety issues are channeled to the Executive Board and Council.

Radiation Health and Safety Sub-Committee

The Radiation Health and Safety Sub-Committee which includes the RPA, RPO and RPSs meets twice annually to discuss, monitor and examine radiological issues affecting the University and to update on potential or impending changes to legislation.

Dean of College

Deans of College are responsible for the implementation of the Sealed Radiation Sources Policy and the (as identified by the RPA and RPO) Local Rules. The Dean of College, with guidance from the RPO and RPA shall nominate a suitably qualified and trained member of staff to manage radiation safety daily i.e. Radiation Protection Supervisors. The Dean of College must also be satisfied that all relevant staff and students within their area of responsibility are aware of the University's rules and requirements regarding the management of sealed sources of ionising radiation.

Radiation Protection Advisor (RPA)

In accordance with the IRR2017, the University has appointed a Radiation Protection Advisor (RPA). The RPA, who is an external consultant, shall advise University management of all aspects of the use of ionising radiation and radioactive substances relating to the health and safety of workers, including the designation of workers and the classification of designated areas. The RPA's responsibilities include:

- Identification of requirements relating to Controlled and Supervised Areas.
- Prior examination of plans for installations and the acceptance into service of new or modified sources of ionising radiation in relation to any engineering controls, design features, safety features and warning devices.
- Regular checking of work systems provided to restrict exposure to ionising radiation.
- Annual calibration of radiation monitoring equipment and ensuring such equipment is serviceable and correctly used.
- Periodic examination and testing of engineering controls, design features, safety features, and warning devices and regular checking of systems of work to restrict exposure to ionising radiation.

The RPA will also be consulted in relation to:

- Prior Risk Assessments.
- The conduct of various investigations required by IRR2017.
- The drawing up of contingency plans.
- Dose assessments and required records.

Radiation Waste Adviser (RWA)

The Environmental Permitting Regulations require the permit holder to consult a Radioactive Waste Adviser on the following matters and have due regard to the advice provided by the Radioactive Waste Adviser:

- Achieving and maintaining an optimal level of protection of the environment and the population.
- Checking the effectiveness of technical devices for protecting the environment and the population.
- Acceptance into service, from the point of view of surveillance of radiation protection, or equipment and procedures for measuring and assessing, as appropriate, exposure and radioactive contamination of the environment and the population.
- Regular calibration of measuring instruments and regular checking that they are serviceable and correctly used.

Radiation Protection Officer (RPO)

To ensure the requirements of the Ionising Radiation Regulations and the Environmental Permitting Regulations are met, the University has appointed a Radiation Protection Officer (RPO) to provide guidance and support. In addition, the RPO will provide support and co-ordinate with both the RPA and the RPS's with regards to ionising radiation issues. Responsibilities include:

- Managing the radiation database.
- Ensuring all radiation workers receive appropriate training before undertaking any radiation work.

- Appointing enough local RPS' with training provided as required.
- Ensuring suitable Local Rules and risk assessments are produced.
- Monitoring radiation areas to ensure Local Rules, Risk Assessments and safe working practices are followed.
- Coordinating the work required to upgrade / commission / de-commission radiation laboratory facilities.
- Provide advice and guidance to Campus Services, Colleges and Professional Services if impacted by radiation work.
- Provide advice and guidance to the Radiation Health and Safety Sub-Committee and University Health and Safety Committee, as appropriate.
- Liaising with Natural Resources Wales, the Health and Safety Executive and other relevant bodies on behalf of the University.
- Ensuring all accidents and incidents associated with radiation work are reported to Health and Safety, the RPA and other Regulatory Authorities as required with the subsequent investigation appropriate to the nature of the incident.

Radiation Protection Supervisors (RPS)

As required by the IRR2017, the University will appoint Radiation Protection Supervisors in all Colleges using ionising radiation to provide an adequate level of day-to-day supervision for all radiation work.

Persons appointed to the role of RPS should be suitably competent through their knowledge, ability, training and experience to carry out this role. The RPO and RPA will make recommendations to the Dean of College as to the suitability of potential / proposed RPS's. Each RPS must be appointed in writing by their Dean of College and will:

- Know and understand the requirements of the IRR2017 and relevant Local Rules.
- Command sufficient authority from radiation workers to allow them to supervise the radiation protection aspects of their work.
- Understand the necessary precautions to be taken and the extent to which these precautions restrict exposure.
- Monitor their work areas to ensure the general infrastructure condition, to check safe working practices are followed and that equipment is tested / maintained / inspected as appropriate.
- Regularly check records to ensure they are maintained in accordance with the Local Rules with records forwarded to the RPO as required.
- Report faults / concerns as required.
- Know what action to take in an emergency.

RPSs will also assume responsibility as competent persons under EPR 2016 except where work with electrically generated x-rays is the only ionising radiation source use.

Radiation Worker

Radiation workers have a legal responsibility to protect both themselves and others from any hazard arising from their work and must not expose themselves or others to ionising radiation more than is reasonably necessary for the purpose of their work. They must also make full use of all protective equipment provided for their safety and dosimeters, reporting all defects immediately to the RPS.

As documented below, training will be provided to all new radiation workers. Before starting work with ionising radiations, radiation workers must be registered and receive a copy of the Local Rules for the area they will be working in, and which they must familiarise themselves with before training.

The RPO may revoke registrations to undertake radiation work if Local Rules, safe working practices etc are not followed.

Maintenance Engineers

Maintenance personnel carrying out any maintenance/repairs to equipment in Designated Areas must be authorised and supervised by the RPS or RPO.

7. TRAINING AND INFORMATION

RPO

The RPO will be required to attend the RPS training course and specific training provided by the RPA. Additional / refresher training will then be arranged as advised by the RPA.

RPS(s)

Prior to appointment, all RPS's will be required to attend a 1-day site based RPS training course run by the RPA. Refresher training will be provided as required by the RPA.

Radiation Workers

For the purposes of this policy, radiation workers are defined as those using Type 4 and Type 5 sources. Such workers must receive suitable training that highlights the radiological risks associated with the work and the Local Rules governing the use of the sources. The RPO will maintain these training records.

Maintenance Engineers/Campus Services Maintenance Staff

The local RPS will provide job awareness training that covers the hazards and risks to maintenance engineers and Campus Services maintenance staff before they are permitted access, under direct supervision to radiological areas. In addition, the RPO will provide Laboratory Awareness training to relevant maintenance staff at the request of Campus Services.

Records of Training

The RPA will be responsible for maintaining records of RPO and RPS training. The RPO will maintain records of Radiation Worker training on the radiation database.

All records will include the date of the training, the title of the course, the person's name and who provided the training. Further information on the course content will be provided by the RPA / RPO if required.

Local Rules and Other Information

Local Rules are a legal requirement for Controlled and if applicable, Supervised Areas and are designed to ensure all exposures to ionising radiation are kept to as low as is reasonably practicable. Local Rules reflect good practice and are the cornerstone in ensuring compliance with IRR 2017 and EPR 2016. As such the University issues Local Rules (produced by the RPO and RPA) for all Designated Areas.

Radiation workers are informed and instructed about all Local Rules relevant to their work, which are also available in each Supervised Area.

In addition, a copy of the relevant Authorisations (Permit / Licence) will be available in each Radiation Laboratory.

8. PLANNING AND IMPLEMENTATION

Source Acquisition

The acquisition of all new all new sealed sources must be approved in writing by the RPO. Prior to approval, the RPO will check that the source is either exempt under EPR (2017) or allowed under permit number EPR/RB3593NK.

Risk Assessments – General

A Radiological risk assessment must be completed and approved by the RPA / RPO before any new work activity involving type 4 or type 5 sources commences.

The risk assessment must identify the hazards and evaluate the nature / magnitude of the risks to which workers and others could be subjected. In addition, it should take account of both normal operating conditions and realistic foreseeable accidents and incidents. Where an accident / incident is reasonably foreseeable a contingency plan must be detailed in the Local Rules and all radiation workers trained in implementing the contingency plan.

Infrastructure

The RPO will liaise with the RPA to make certain radiation laboratory facilities are suitable and fit for purpose. This will include communicating with Campus Services where required to ensure any building works carried out as part of radiation laboratory upgrades and / or during commissioning / de-commissioning are undertaken safely and in accordance with legislative requirements.

Source Security, identification and integrity

- Unauthorized access, loss or theft or damage by fire or other means of any sealed source shall as far as reasonably practical be prevented.
- All sealed sources must be marked with a unique identification number, trefoil and the work radioactive so far as reasonably practical.
- Where practical, the RPO will perform a wipe test of all sealed sources every 2 years.
- Records of source acquisition, location and disposal shall be in accordance with Regulation 27 (2) of EPR (2017) for ALL sealed sources. Requirements are defined in section 3.1 of permit EPR/RB3593NK.
- Disposal of any sealed source must be authorised in writing by the RPO having sought advice from the RPA.

Incidents and Accidents

All radiation workers will be instructed that any incident such as loss, theft, failure of engineering controls etc must be reported immediately to the RPS who will notify the RPO.

The RPO will then be responsible for informing Head of Health and Safety, Campus Services and the RPA.

Investigation

The RPO (with assistance from the RPA) will investigate any incident / accident, acting on the results of the investigation and preparing a report for the RPA and Senior Management. The RPO, with guidance from the RPA, will determine if the incident is notifiable to the regulator/s (Natural Resources Wales (NRW), Health & Safety Executive (HSE)) and the Police.

Notification of Certain Occurrences

The RPO will notify, without delay NRW (0300 065 3000) of the following events:

- Malfunction, breakdown or failure of equipment or techniques or accident, which has caused, is causing or may cause a sealed source to be damaged or lost.
- The breach of a limit specified in table 2.1 or permit EPR/RB3593NK
- Theft or attempted theft or loss of a sealed source. **NOTE:** The Police will also be informed in such instances.

Monitoring

The local RPS will, on a day-to-day basis, be responsible for ensuring radiation workers comply with relevant Local Rules and controls outlined in associated radiation work Risk Assessments. The RPO will support this by undertaking regular spot checks to ensure safe working practices are followed.

Change in Details / Cessation of Use

The RPO will notify the NRW in writing, at least 14 days in advance of any change in the University's registered name or address.

9. EQUALITY IMPACT ASSESSMENT

Every effort must be made to support individuals, so they are treated equally and to enable them to undertake their tasks in the same way as their peers.

However, in some rare instances, there may be a requirement to treat 'persons with a protected characteristic' differently to safeguard their own health, safety and well-being. Any such consideration will be discussed with the RPA, the RPO and the individual concerned with reasonable adjustments made where possible.

10. AUDITS

Health and Safety, Campus Services, may undertake periodic audits or reviews to assess the effectiveness of and compliance with, this Policy.

Colleges / Professional Services must periodically review their own procedures to ensure the requirements of this Policy are implemented, suitable and effective.

The Health, Safety and Emergency Management Committee will review this Policy in accordance with the agreed Review Schedule, with any significant changes considered by the Executive.

In addition, the Policy will be audited by the RPA as required with the formal report and any remedial actions required sent to the RPO for implementation.

Ends