

# *lechyd a Diogelwch – Health and Safety*



HEALTH AND SAFETY POLICY STANDARD

## **USE OF X-RAY SETS**

This Policy Standard states the requirements placed on the University and its Colleges and Departments with regards to the management and safe operation of X-ray sets.

***The Policy Standard applies to:***

- *DEXA X-ray Sets.*
- *XRD and XRF X-ray Sets.*
- *X-ray Operators.*
- *Radiation Protection Supervisors (X-Ray Sets).*
- *Staff, Students and Volunteers (participants).*

***This Policy Standard does not apply to:***

- *Open sources of ionising radiation.*
- *Sealed sources of ionising radiation.*
- *Radon.*
- *fMRI, NMR.*

Date of Implementation: 1<sup>st</sup> June 2010

## **POLICY STATEMENT**

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

### **1. INTRODUCTION**

As well as the general duties in law, the University and its Colleges and Departments has a specific obligation under the Ionising Radiation Regulations to ensure exposure to ionising radiation arising from work activities, is kept as low as reasonably practicable and does not exceed dose limits specified for individuals. In addition, under the Ionising Radiation (Medical Exposure) Regulations, the University also has a responsibility to protect those being exposed to ionising radiation, in the form of x-rays for medical or research purposes.

### **2. BACKGROUND & GENERAL INFORMATION**

X-rays are a form of radiation. They can be produced electronically by inducing the sudden deceleration of electrons in an x-ray tube. X-rays can be very penetrating, depending on the energy of the x-rays and can be capable of passing through lead. X-rays have many positive uses and are used widely, for example in medicine, research and industry.

X-rays are ionising which means they are potentially damaging to biological tissue, causing cell damage and even cell death in high exposure situations. In the short term (acute) symptoms as a result of over exposure can range from nausea, vomiting, superficial burns etc. In the long term, over exposure can cause (chronic) health affects, for example dermatitis, cataracts, cancer and can ultimately lead to death.

To protect operators of X-ray sets and those being scanned from the affects of ionising radiation, the University must comply with the requirements of:

- Ionising Radiations Regulations (IRR) 1999.
- Ionising Radiation (Medical Exposure) Regulations (IRMER) 2000.

To help the University comply with legislation it has appointed an external Radiation Protection Adviser (RPA). In addition, an internal Radiation Protection Officer (RPO) and a number of Radiation Protection Supervisors (RPS) have been trained and formally appointed to provide advice and guidance to those working with radiation at the University.

### **3. RESPONSIBILITY OF RADIATION PROTECTION ADVISER / RADIATION PROTECTION OFFICER / RADIATION PROTECTION SUPERVISOR**

#### **The Radiation Protection Adviser (RPA):**

The RPA shall provide specialist advice and assistance to the University with regards to Ionising Radiation. The RPA shall also undertake periodic reviews and audits of the University's systems for managing the risks from ionising radiation.

The RPA must be consulted on all matters listed in Schedule 5 of IRR99.

**The Radiation Protection Officer (RPO):**

The RPO shall oversee the day to day operation and implementation of this Policy Standard and liaise with the external Radiation Protection Adviser (RPA) and local RPS' as is necessary.

The RPO shall also ensure the University appoints and trains a sufficient number of local RPS'.

**The Radiation Protection Supervisor (RPS):**

The RPS shall:

General

- Ensure all personnel are registered before they work with X-ray sets.
- Ensure where appropriate, registered personnel understand the hazards involved with working with X-ray sets, associated precautions and have copies of the Local Rules.
- Brief Operators of X-ray sets in the correct positioning of the dosimetry badge.
- Ensure all work with X-ray sets is registered with Health and Safety Services (HSS).
- Notify all equipment capable of generating X-rays (including adventitious X-rays) to Health and Safety Services.
- Return all monitoring devices promptly to HSS at the end of the set period of use.
- Regularly check laboratory conditions.
- Distribute copies of guidance notes to personnel as and when required.
- Carry out an annual survey scatter measurement, forwarding the findings to HSS.
- Liaise with the University RPO, RPA and Service Engineers when required.
- Ensure defective X-ray sets are removed from service until appropriate repairs have been undertaken.
- Arrange maintenance of the X-ray set in accordance with manufacturer's recommendations.
- Immediately report staff and students not using the X-ray sets appropriately to the Radiation Protection Officer / supervising RPS.

DEXA Sets

In addition to the general requirements above, with regard to the DEXA sets, the appropriate RPS shall:

- Train personnel in the use of the DEXA set.
- Carry out periodic, random checks to ensure Operators are:
  - working within the Local Rules
  - maintaining the Supervised Areas appropriately and preventing any unauthorised access
  - providing appropriate information on the risk of X-ray scans to each volunteer and ensuring the Consent Form is completed and signed by the volunteer.

- Implement and maintain an overview of the record system documenting the use of DEXA scanners (to include the operators name, volunteer ID, date, scan type, scan code, ethics approval reference / unique identifier and any other information the RPS considers relevant).
- Be in attendance during the annual RPA / RPO radiation dose rate survey.
- Notify the RPA / RPO if the DEXA instruments are moved and / or require a re-commissioning survey.

#### **4. COLLEGE / DEPARTMENTAL REQUIREMENTS**

Each College and Department is required to:

- a) Following recommendation by the Radiation Protection Adviser and Radiation Protection Officer appoint a Radiation Protection Supervisor to oversee the day to day management and operation of the X-ray sets within their area of responsibility.
- b) Implement management controls for X-ray sets within their area of responsibility as recommended by the Radiation Protection Officer / Radiation Protection Supervisor. For example, restricted access.
- c) Implement systems to ensure all staff, students, visitors and contractors are aware of and understand these management controls.
- d) Implement systems to ensure scans are not undertaken until appropriate Ethical Approval has been received (as detailed in the Ethical Approval Process for the Use of X-Rays for Medical or Research Purposes document) and that Ethical Approvals remain current.
- e) Implement systems to ensure the dose constraints that form part of the Ethical Approval process are adhered to.

#### **5. RESEARCH SUPERVISOR**

Research Supervisors are required to:

- Ensure all work under their supervision has appropriate Ethical Approval by the relevant Ethical Approval Committee before any DEXA scan take place.
- Ensure all DEXA scans undertaken as part of their research are performed by an approved X-ray Operator.
- Ensure X-ray Operators performing scans on their behalf are fully aware of, and understand the key conditions of the Ethical Approval such as the need to adhere to dose constraints.

#### **6. X RAY OPERATOR RESPONSIBILITIES**

As with those duties placed upon the University and its Colleges / Departments, staff and students also have responsibilities in law. With regards to this Policy Standard, X-ray Operators must:

- a) Never use an X-ray set unless authorised (registered) and trained to do so.
- b) Prior to the scanning of a volunteer as part of a research project (DEXA units) ensure Ethics Approval is in place and the associated paperwork including the volunteer's consent is present.
- c) Adhere to the key conditions eg dose constraints.

- d) Follow all management controls implemented by their College / Department.
- e) Cooperate with and comply with all instruction given by the Radiation Protection Supervisor with regards to the safe use and management of the X-ray Set.
- f) Not interfere with or mis-use any X-ray sets.
- g) Immediately report defects with the X-ray sets to the Radiation Protection Supervisor.
- h) Not use the X-ray set for any other purpose than that which they have ethics approval for.
- i) Contact the Radiation Protection Supervisor immediately if they wish to change what they are using the X-ray set for.

## **7. VOLUNTEERS**

As with those duties placed upon the University and its staff and students, those volunteering to be X-rayed (human participants) in medical research involving X-rays also have responsibilities in law. With regards to this Policy Standard, volunteers must:

- a) Follow all instruction given by the Operator and / or Radiation Protection Supervisor.
- b) Ensure they do not participate in a scan until they have received appropriate information from the Operator, understand the information given, have signed the Consent Form and provided such medical information as is necessary.

## **8. FURTHER INFORMATION AND PRACTICAL GUIDANCE**

In addition to the information found in this Policy Standard more practical and procedural guidance can be found in the following associated Information Sheet and on the Health and Safety Website:

- Information Sheet - Ethical Approval for the Use of X-rays for Medical and Research Purposes.
- Guide to the Safe Use of the DEXA QDR4500A.

## **9. REVIEW AND AUDIT PROCEDURES**

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

Health and Safety Services will also carry out general and periodic audits to ensure compliance against this Policy Standard.

In addition, the University's Health and Safety Committee may from time to time review the effectiveness of the University's system for the management of X-ray use.

**End.**