**LOCAL RULES**

as required by the Ionising Radiations Regulations

(Northern Ireland) 2000

**School of Chemistry and Chemical Engineering**

Panalytical Xpert Pro XRD analyser



**School of Chemistry and Chemical Engineering**

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1. Introduction

***Legislation***

The Ionising Radiations Regulations (Northern Ireland) 2000 provide the basic requirements for the control of exposure arising from work with ionising radiation. An ‘Approved Code of Practice’ is available to assist with the interpretation of the regulations. The enforcing authority is the Health and Safety Executive for Northern Ireland (HSENI). The above regulations cover the protection of both employees and members of the public.

***Responsibilities***

The **School of Chemistry and Chemical Engineering** as the location of the **Panalytical XRD**, has the general responsibility for compliance with the Regulations. Individual workers also have certain responsibilities which are included in these Local Rules.

Radiation Protection Adviser (RPA) - appointed to advise the University on the statutory requirements and all aspects of radiation safety.

Stephanie Slater

Onephoton Limited

Tel: 02821 758704

Email: [Stephanie@onephoton.com](mailto:Stephanie@onephoton.com)

Radiation Protection Officer (RPO) - appointed to advise staff on all aspects of safety in the use of ionising radiation and to liaise with the RPA.

Lindsey Smith

Occupational Health and Safety Service

Tel: 02890 974612

Email: [l.smith@qub.ac.uk](mailto:l.smith@qub.ac.uk)

Radiation Protection Supervisor - appointed to ensure that, on a day to day basis, work with ionising radiation is carried out safely and in accordance with these Local Rules.

**Neil Ogle**

**School of Planning, Architecture and Civil Engineering**

**Ext 4906**

**n.ogle@qub.ac.uk**

Details of all RPS’s can be found in Appendix 3.

These Local Rules describe local arrangements for meeting the statutory requirements and must be brought to the attention of staff and students using the **School of Chemistry and Chemical Engineering Panalytical XRD,** or other persons affected.

Staff and students are required to sign the statement in Appendix 1 to show that they have read and understood the arrangements and requirements within these Local Rules.

Any person who wishes to use ionising radiation for the first time, must register as a radiation worker with their RPS using the required form (Appendix 2).

2. Compliance

Every individual using the **School of Chemistry and Chemical Engineering Panalytical XRD** has a legal responsibility to protect both themselves and others whom their work might affect.

Please note that individuals not abiding by the Local Rules will be prohibited from using the facility as this will be considered as a serious breach of safety standards.

3. Policy on Restriction of Exposure and Personnel Monitoring

***Monitoring Exposure***

All doses received by personnel working within the School of Chemistry and Chemical Engineering Panalytical XRD area will be kept as low as reasonably practicable. To assist in implementing this policy, area and personnel radiation monitoring will be carried out.

***Pregnancy***

It is recommended that female users of the **School of Chemistry and Chemical Engineering Panalytical XRD** who become pregnant should inform their Supervisor / Local RPS as soon as they are aware of their pregnancy. Once informed of the pregnancy, the University will ensure that the dose to the foetus is below 1mSv for the rest of the pregnancy.

***Dose Investigation Level***

The RPS, in liaison with the RPO and RPA will ensure that an investigation is carried out when the cumulative effective dose on a personal dosimeter exceeds 1mSv in a calendar year.

4. Controlled Area

**Description of the Controlled Area:**

* **School of Chemistry and Chemical Engineering**
* **0B.410**
* **Air conditioned basement work area**
* **Key controlled by log out book**
* **All XRD authorised personnel**



***Entry into the Facility / Hot room***

**The area is kept locked when not in use – the key in accessed via ASEP upon signature and deposit of suitable ID**

Entry to this Controlled Area is only allowed if the written arrangements set out in section 5 of this document are followed.

5. Written Arrangements for Entry into Radiation Controlled Areas

Under regulation 18(2) of the Ionising Radiations Regulations (NI) 2000, written arrangements are required when non-classified persons enter a Controlled Area. These arrangements describe the conditions for entering and remaining in a Controlled Area.

***General Conditions for All Persons***

* The RPS is responsible for ensuring that procedural arrangements are complied with in the Controlled Area.
* Those working with X-ray equipment must be familiar with and adhere to the relevant Local Rules and have received suitable and sufficient training.
* Those working with X-Ray equipment must not expose themselves or others to radiation unnecessarily.
* All staff using the **School of Chemistry and Chemical Engineering Panalytical XRD** must enter their details in the record book provided.

The RPS will assess whether the registered person has sufficient knowledge of radiation and has had adequate training in radiation protection for the work intended to be undertaken. If the RPS' assessment is that further training is required, they will arrange for the necessary training to be delivered.

The RPS reserves the right to refuse commencement or stop any radiation work at any time if they feel that the work is unnecessary / is being carried out in an unsafe manner or the registered user has shown to have insufficient training.

***‘Others’ Undertaking Supervised Experiments or Demonstrations***

1. Other staff, students and approved visitors may use the **School of Chemistry and Chemical Engineering Panalytical XRD** following appropriate training from the Designated Workers and on completion of the ‘User Registration Form’ (Appendix 2).

2. The RPS must be satisfied that such precautions as may be necessary will be enforced and that an acceptable assessment of personal exposure to radiation has been made.

3. They must be accompanied and supervised by a radiation worker during the time they remain in a designated radiation area.

6. Safe Working Instructions

***All Personnel***

* All personnel using the **School of Chemistry and Chemical Engineering Panalytical XRD** should not knowingly expose themselves or others to radiation more than necessary for the purpose of their work.
* Only personnel who have received suitable and sufficient training in the use of the **School of Chemistry and Chemical Engineering Panalytical XRD** may undertake exposures.
* All personnel must comply with the appropriate Written Arrangements for the Controlled Area.
* When provided, personal dosimeters must be used and when not in use, should be stored in a dry place away from any source of heat.
* All personnel using the **School of Chemistry and Chemical Engineering Panalytical XRD**
  + Must ensure that no-one deliberately misuses or tampers with X-ray equipment or its safety systems
  + Must be aware of how to switch the unit off by pressing the X-ray off button or by turning the key switch on the control panel
  + Are responsible for the immediate reporting of faults to the RPS.
* At the end of the scanning sessions the **School of Chemistry and Chemical Engineering Panalytical XRD** should be switched off.

***Safety Precautions***

1. Do not override or simulate any of the interlock mechanisms.
2. Whilst X-rays are being generated, do not remove by any means whatsoever, any part or any accessory which contributes to the shielding of the X-ray beam.
3. When opening the doors on an X-ray Unit, ensure that the X-ray tube is not energised.

***Checks of X-ray Equipment***

A radiation safety assessment of all X-ray equipment must be carried out at intervals not exceeding three years. All X-ray equipment should be adequately maintained and regularly serviced in line with the recommendations from the Service Engineer. Records of maintenance and service visits should be kept by the RPS.

***Permit to Work***

A permit to work is required for any maintenance work by Service Engineers. Their work must be authorised and supervised by the RPS. No one is permitted into the room without the permission of the RPS. Cleaners do not require a permit to work, but must be supervised by the RPS or a Designated person whilst carrying out their role.

***Risk Assessment***

Any changes in X-ray equipment, room layout or technique will require a risk assessment to be carried out (or the current assessment reviewed) prior to their implementation. This should be carried out by the RPS in liaison with the RPO / RPA.

7. Contingency Plans

Reasonably foreseeable accidents, incidents or occurrences involving X-ray generating equipment have been identified as follows:

* Failure of the X-Ray to Terminate Exposure
* Persons receiving or suspected of receiving an unintended dose of ionising radiation

***Failure of an X-ray Unit to Terminate Exposure***

If the exposure warning light remains on after the set time has elapsed, or any other fault indicated or suspected, the Unit should be switched off immediately at the mains supply.

The RPS should be informed and the Unit should not be used again until an investigation has resulted in a satisfactory explanation and remedial action has been carried out.

***Unintended Dose of Ionising Radiation***

Any incident, or suspected incident involving an unintended exposure of radiation to any person, must be reported immediately to the RPS. Unless the RPS can show beyond reasonable doubt that this could not have occurred, they must notify the RPO / RPA. The RPA will then advise on the subsequent action in relation to legislative requirements and radiation safety.

If the incident is due to machine malfunction, software failure etc. the Unit should not be used again until an investigation has resulted in a satisfactory explanation and remedial action has been carried out.

8. Records

The following records should be kept:

1. Copies of all prior risk assessments.
2. A record of the critical examination.
3. A record of maintenance and modification for each item along with any defects found by users (fault log).
4. A record of checks on safety features and warning devices.
5. Reports of work carried out together with any action taken.
6. A record of dosimetry results from the Approved Dosimetry Service (to be kept for at least two years).
7. Results of any investigation into researchers exceeding the dose investigation level for the first time in any calendar year.

9. Review of Local Rules

These Local Rules will be reviewed every three years, or subsequently to any changes in practice that may affect the contents by the appointed RPS and RPO / RPA.

10. Approval of Local Rules

These Local Rules have been approved by the Radiation Protection Supervisor, the Radiation Protection Officer and the Radiation Protection Adviser.

Radiation Protection Supervisor \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Radiation Protection Officer \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Radiation Protection Adviser \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Summary of Local Rules (Facility / Name of X-Ray generating equipment)**

Local Rules must be followed at all times. This document provides a brief reminder of the Local Rules which apply to the use of the **School of Chemistry and Chemical Engineering Panalytical XRD** If anyone has any concerns regarding radiation protection, they should consult (in the first instance) the full Local Rules and if there are still concerns, **ASEP Management – Trevor Sewell ext 5579**, [t.sewell@qub.ac.uk](mailto:t.sewell@qub.ac.uk) or the local Radiation Protection Supervisor – *Neil Ogle 4906*

**General Instructions:**

1. All personnel working within the School of Chemistry and Chemical Engineering Panalytical XRD unit have a duty to protect themselves and others. They should not knowingly expose themselves or other people to radiation more than necessary for the purpose of their work and they should exercise reasonable care.
2. The controlled area of the School of Chemistry and Chemical Engineering Panalytical XRD is the area within the XRD cabinet accessed via the twin doors at the front of the cabinet.
3. You may only enter the Controlled Area to place your sample in the platform in accordance with the Written Arrangements and the Local Rules or as directed by the RPS.
4. Personnel using the School of Chemistry and Chemical Engineering Panalytical XRDmust ensure that no-one deliberately misuses or tampers with X-ray equipment or its safety systems.
5. Dosimeters, if applicable, must be used as directed and when not in use should be stored in a dry place away from any source of heat.
6. All personnel working with equipment in the Controlled Area should be aware of how to switch the Unit off at the mains plug.
7. Any unintended exposure of persons must be reported immediately to the RPS.
8. At the end of the scanning sessions the Unit should be switched off.

**Contingency Plan:**

1. If the exposure warning light remains on after the set time has elapsed, or any other fault is indicated or suspected, the Unit should immediately be switched off at the mains supply.
2. The Unit should not be used again until an investigation has resulted in a satisfactory explanation and remedial action has been carried out by the relevant Engineer / Contractor.

Further considerations are detailed in the full version of the Local Rules, of which all personnel using the **School of Chemistry and Chemical Engineering Panalytical XRD** should be familiar. Refusal by any person to comply with the Local Rules must be notified to the RPS.

**Appendix 1: Local Rules Sign off Sheet**

Every individual working with ionising radiation has a duty to protect themselves and others from any hazard arising from their work. It is therefore essential, and a requirement of the Ionising Radiations Regulations (NI) 2000, that the individual is familiar with the responsibilities and precautions imposed by the Regulations through Local Rules.

When you understand your responsibilities you should sign and date the declaration below:

**I have read and understood these Local Rules and guidelines and will abide by their recommendations**

|  |  |  |
| --- | --- | --- |
| **Name** | **signature** | **date** |
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**Appendix 2: Registration of Users of X-ray generating equipment**

## REGISTRATION OF USERS OF X-RAY GENERATING EQUIPMENT

Before commencing work with ionising radiations it is necessary to register with the University’s Radiation Protection Adviser (RPA).

In addition, it is vital that you are familiar with your Departmental Local Rules concerning work with equipment generating ionising radiations such as X-rays. If you have any doubts or queries please contact either your Departmental Radiation Protection Supervisor (RPS) or the University’s RPO at 4612/4613.

***Please complete the following details and forward the form to your Departmental RPS who will send it to the RPO under sealed envelope.***

Surname: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Forenames: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Sex: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date of Birth: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

School/Department: \_\_\_\_\_\_\_\_\_\_ School of Chemistry and Chemical Engineering Panalytical XRD \_\_\_\_\_\_

Laboratory/Room Number: \_\_\_\_\_\_0B.410\_\_\_\_\_\_\_ Status: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Type of Generating Equipment to be used: Panalytical XRD \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Name and address of last employer where designated as a radiation worker: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

***Please read the following carefully and sign:***

I have read, am fully familiar with and will carefully follow the Departmental Rules for work with ionising radiations.

I wish to be registered as a Radiation Worker and am confident that my practical ability will allow me to work safely and without danger to myself or my colleagues.

Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Project Supervisor Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Appendix 3: Details of Local Radiation Protection Supervisors:**

**Centre for Cancer Research and Cell Biology**

David McGibbon Alan Coffey

Tel: 02890 972795 Tel: 02890 972780

Email: [d.mcgibbon@qub.ac.uk](mailto:d.mcgibbon@qub.ac.uk) Email: [a.coffey@qub.ac.uk](mailto:a.coffey@qub.ac.uk)

**Centre for Infection and Immunity**

Barney O’Loughlin Mervyn McCaigue

Tel: 02890 975827 Tel: 02890 972237

Email: [b.oloughlin@qub.ac.uk](mailto:b.oloughlin@qub.ac.uk) Email: [m.mccaigue@qub.ac.uk](mailto:m.mccaigue@qub.ac.uk)

Victoria Jewhurst

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Email: [v.jewhurst@qub.ac.uk](mailto:v.jewhurst@qub.ac.uk)

**Centre for Public Health**

Sarah Gilchrist Christine Belton

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**School of Biological Sciences**

Konstantin Panov

Tel: 02890 972119

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**School of Planning, Architecture and Civil Engineering**

Neil Ogle

Tel: 02890 974906

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**School of Mathematics and Physics**

Marco Borghesi Jackie Patrick

Tel: 02890 973516 Tel: 02890 973524

Email: [m.borghesi@qub.ac.uk](mailto:m.borghesi@qub.ac.uk) Email: [j.patrick@qub.ac.uk](mailto:j.patrick@qub.ac.uk)

**School of Geography, Archaeology and Palaeoecology**

John Meneely Stephen Hoper

Tel: 02890 973930 Tel: 02890 973104

Email: [j.meneely@qub.ac.uk](mailto:j.meneely@qub.ac.uk) Email: [s.hoper@qub.ac.uk](mailto:s.hoper@qub.ac.uk)

**School of Dentistry**

Lindsay Geary

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