Organisational Arrangements for the Management of Risk from Ionising Radiations

Health and Safety Service
Introduction

These Organisational Arrangements for the Management of the Risk from Ionising Radiations form part of the College’s Health and Safety Policy. They outline how the College seeks to comply with the requirements of the Ionising Radiations Regulations 2017 (IRR17) and the Environmental Permitting (England and Wales) Regulations 2016 and associated legislation.

Birkbeck College as an employer is deemed to be working with ionising radiation where they carry out:
- A practice (defined in Regulation 2 (1)) of the IRR17; or
- Work in places where the radon gas concentration exceeds the values in regulation 3(1)(b) of the IRR17

As such the College is such an employer as it operates x-ray radiation generating equipment such as x-ray diffraction and electron microscopy\(^1\) and as such is registered with the Health and Safety Executive.

Currently (February 2018) there is no other relevant work practice being undertaken that involves work with ionising radiation, radioactive substances or in atmospheres where the radon gas concentration exceeds 300 Bq m\(^{-3}\).

General requirements – Notifications & Registrations.

Regulations 5 and 6 of the IRR require certain work or practices to be either notified or registered with the Health and Safety Executive. The only practices registered to date are those outlined in the Introduction.

Therefore no person, employee or student, shall undertake any work or practice with ionising radiations other than those associated with x-ray crystallography or electron microscopy.

No person shall import, transport, use or dispose of any radioactive substance without consulting with the Health and Safety Service in good time\(^2\) to ensure that appropriate risk assessment and authorisations are in place and where necessary the Radiation Protection Advisor (RPA) is consulted.

Where a person, employee or student (as part of their studies or research) undertakes work with ionising radiation or may otherwise be exposed to ionising radiation (other than as part of personal medical interventions) they must inform their line manager or supervisor and the Health and Safety Service. For example, a member of staff undertaking neutron diffraction work at another facility, a student undertaking a photography assignment or social science research work at a nuclear

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\(^1\) Normally resulting in low-level x-ray generation due to bremsstrahlung.

\(^2\) At least three months.
reactor facility or environmental work in a mine where the radon gas concentration can exceed 300 Bq m$^{-3}$.

**General requirements – Consents**

Regulation 7 of the IRR concerns “specified practices” that require prior consent from the HSE. Such practices are of high risk such as the deliberate administration of radioactive substances to persons or animals for the purpose of medical or veterinary treatment or diagnosis or the operation of an accelerator (electron microscopy is exempt). No such work is being undertaken and is unlikely to be undertaken any time in the near future.

**Radiation risk assessments**

Before beginning any new activity involving work with ionising radiation there needs to be a suitable and sufficient assessment of risk and work may not commence until that assessment has been undertaken and control measures to limit exposure in routine operation and in event of emergency are implemented. The Health and Safety Service and Radiation Protection Advisor **must** be consulted on all new proposed radiation work.

**Restriction of exposure**

Regulation 9 of the IRR requires the employer to take all necessary steps to restrict exposure so far as is reasonably practicable to ionising radiation. No dose limit may be exceeded and doses should be kept as low as is reasonably practicable. Dose sharing is not considered a primary means of restricting exposure.

Guidance from the Radiation Protection Advisor on dose reduction shall be sought during the risk assessment process.

No pregnant or breastfeeding employee or young person$^3$ shall be exposed to ionising radiation as part of their employment or studies at the College until a suitable and sufficient risk assessment is undertaken to identify measures to control exposure of the foetus, new-born infant or young person to acceptable levels. Guidance from the Health and Safety Service and if necessary the RPA **must** be sought.

**Personal protective equipment**

Where a control measure involves the use of personal protective equipment (PPE) it must comply with the relevant provision of the Personal Protective Equipment Regulations 2002 and adequate facilities must be provided for its storage, cleaning and maintenance.

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$^3$ Under the age of 18
Maintenance and examination of engineering controls etc.

Where a control measure to restrict exposure is an engineering control, design feature, safety feature or warning device arrangements must be made for its maintenance and testing at suitable intervals.

Dose limitation

The College must ensure that exposures to ionising radiation are kept as low as reasonably practicable and complying with relevant dose limits is an absolute requirement. Dose limits for various classes of persons are specified in Schedule 3 of the Regulations.

In order to be reassured that doses are being kept as low as reasonably practicable the College may require dosimeters to be worn. Failure to wear an assigned dosimeter appropriately may result in the individual to whom it is assigned being barred from undertaking work with ionising radiation.

Contingency plans

Where a risk assessment indicates that it is reasonably foreseeable that a radiation accident might occur then a contingency plan will need to be developed in consultation with the RPA and the Health and Safety Service.

Radiation Protection Advisor

The College shall appoint and where necessary consult with a suitably competent radiation protection advisor. The appointment shall be in writing and shall specify the scope of advice to be given.

The RPA must be consulted in respect of:

- The implementation of requirements as to Controlled and Supervised Areas
- Prior examination of plans for installation 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 provided to restrict exposure to ionising radiation
- The regular calibration of equipment provided for monitoring levels of ionising radiation and the regular checking that such equipment is serviceable and correctly used
- The periodic examination and testing of engineering controls, design features, safety features and warning devices and regular checking of systems of work provided to restrict exposure to ionising radiation.

Information, instruction and training

The College shall ensure that those employees and students who are engaged in radiation work are given appropriate training in radiation protection and receive
suitable information and instruction. The nature of this information, instruction and training is specified in the guidance notes to Regulation 15 of the IRR. Such training shall be repeated at regular intervals and when there is a change of staff or working practices.

**Co-operation between employers**

Where an employee or student (in the course of their studies or research) may be exposed to ionising radiation while undertaking work or research with another employer, the Health and Safety Service must be informed.

Suitable cooperation between employers can then be established. Likewise, no employee or student of another organisation may undertake work on College premises without the prior knowledge of the relevant Radiation Protection Supervisor.

**Designated areas**

Where a risk assessment identifies an area where special procedures for the control of exposure are required, or where certain doses as specified in Regulation 17(1) of the IRR may be received, then that area must be designated as a controlled area.

Where an area fits the requirements of Regulation 17(3) of the IRR then that area shall be designated as a supervised area.

The RPA must be consulted over the designation of controlled and supervised areas. These areas shall be described in the local rules and have suitable signs displayed warning that they have been so designated and the nature of the radiation sources therein. Where possible they shall be physically demarcated. Access to such areas shall be suitably controlled.

Designated areas must be suitably monitored. The RPA must be consulted about the monitoring programme and the nature of the monitors to be used. Such monitors must be suitable for the type of radiation and must be tested and thoroughly examined at least once per year by a suitably competent person. Records of any such monitoring must be maintained for at least two years.

**Local rules and radiation protection supervisors**

Where a supervised or controlled area is designated, then the College must ensure that local rules are established for those areas. The contents of the rules shall comply with the guidance given in the IRR.

In such areas there shall be appointed radiation protection supervisors RPS. The RPA should normally be consulted about the suitability of the RPS. The appointment shall be in writing and the duties of the RPS made clear. The name of the RPS shall normally be posted at the entrance to any controlled or supervised area.
Designation of persons

The RPA must be consulted about the need to designate someone as a classified person\(^4\). Special consideration needs to be given to workers who were previously a classified person. Persons need only be classified if they are likely to receive an effective dose greater than 6mSv per year or an equivalent dose greater than 15mSv per year for the lens of the eye or greater than 150 mSv per year for the skin or extremities.

Dose assessment and recording

Where persons are monitored for radiation dose it shall be with a suitable approved dosimetry service (ADS). The RPS shall be responsible for issuing dosemeters, securing samples, collecting and dispatching dosemeters and sample to the ADS.

Persons issued with dosemeters shall wear them appropriately while at work and follow the instructions given to them by the RPS concerning their use and care. Failure to do so can be an offence under the Health and Safety at Work Act.

Where a dosemeter is damaged or lost the RPS shall inform the Health and Safety Service and will undertake an investigation, possibly with the assistance of the RPA. An estimated or notional dose may be entered on the individual’s dose record in accordance with the requirements of Regulation 23 of the IRR.

Where there is an accident likely to result in a person receiving a dose greater than those mentioned above under “Designation of persons”, then an assessment of potential exposure must be undertaken. The Health and Safety Service, with the advice of the RPA and ADS, will make the necessary arrangements under Regulation 24 of the IRR.

Medical surveillance

Medical surveillance may be required under certain circumstances. This will be arranged by the Health and Safety Service when necessary but is normally limited to classified workers or those who have received an overexposure.

Investigation and notification of overexposure

Where there has been an overexposure or a suspected overexposure the Health and Safety Service must be immediately informed so that an investigation can be undertaken in accordance with Regulation 26 of the IRR.

:\(^4\) The College will not normally need to classify any worker
Sealed sources
The College does not currently have any sealed radiation sources. Special provisions apply to sealed sources and no sealed source shall be purchased, hired or otherwise acquired for use on College premises without the prior authorisation of the Health and Safety Service and the RPA.

Radioactive substances
The College currently does not have authorisation to hold, transport or dispose of any radioactive substance. Contact the Health and Safety Service for advice on acquiring and using radioactive substances.