Handling of Radioactive Samples

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Location of Hardcopies	This document is integrated for York and Scarborough sites. Electronic copies on QPULSE and paper copies in Specimen Reception York & Scarborough.

Changes from last version of this document:

Updated to include changes in documentation following the introduction of Care Groups.

Key personnel reference change: The Radiation Protection Advisor is now:

Sharan Packer based at The Leeds Teaching Hospital (See Pg3).

Contents:

1 Purpose and Principle

Biological samples (blood, urine, tissues or organs) obtained from patients who have recently received radioactive materials for the purposes of therapy or diagnosis are likely to be radioactive. In general, such samples will contain very low levels of radioactivity and consequently do not pose a significant risk to staff provided Standard Precautions (see LM-POL-LOCAL) are applied.

This procedure has been written to comply with the Ionising Radiation Regulations 1999 and then Ionising Radiation (Medical Exposure) Regulations 2000. The Environmental Permitting Regulations 2010 for Medicine (Administration of Radioactive Substances) Regulations 1978 and the Carriage of Good and Use of Transportable Pressure Equipment Regulations.

In all cases, the handling of radioactive biological samples should be performed with the aim of minimising risk. The minimisation of risk can generally be achieved by following departmental policy regarding Standard Precautions of Specimen Receipt. The scope of this procedure only includes the handling of specimens once they have been taken from the patient and does not address any other issues that may be involved in collection of the samples. The period over which samples are required to be treated as radioactive will depend on the type of radioactive material administered, and guidelines on how long precautions need to be adopted after the radioactive administration will be advised by the department responsible for their administration.

Where necessary contact the relevant Radiation Protection Supervisor (RPS) or Superintendent Radiographer for advice:

At York contact: 7726638

At Scarborough: 7712853

Specialist Advice

Further advice can be sought from Leeds Teaching Hospitals.

The Radiation Protection Advisor (RPA) for this laboratory is:

Sharan Packer Telephone: **01133926634**

Email: (**sharanpacker@nhs.net**)

She is appointed to advise on compliance with the legislation. She should be contacted as required for help; advice or problem solving on all matters radiological.

Alternatively contact Mark Barnfield (Radiation Protection Adviser for Nuclear Medicine)

Telephone: **0113 206 7521** or e-mail (**mark.barnfield@nhs.net**)

The Regulations

Regulation (IRR99) on the **movement** of radioactive substances: ‘A radioactive substance (a substance that contains one or more radionuclides whose activity cannot be disregarded for the purposes of radiation protection) to be moved (shall be) kept in a suitable receptacle, suitably labelled, while it is being moved or stored.’

A suitable receptacle will ensure effective restriction of exposure, prevention of dispersal and physical security. (Approved Code of Practice-ACOP). eg. a lead container.

Labelling (ACOP) needs to provide sufficient information for the safety of the person moving the receptacle, and indicate the nature and activity of the substances involved.

Dose limitation is that for a member of the public i.e. not a radiation worker. This achieved by the following:

Samples are in containers.

Number of samples handled is 5 or less per month.

Total exposure time, in direct contact with the sample(s), does not exceed 1 hour.

2 References:

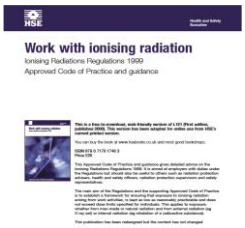
- The Ionising Radiation (Medical Exposure) Regulations 2017
- The Environmental Permitting Regulations 2010 for Medicine (Administration of Radioactive Substances) Regulations 1978
- Carriage of Good and Use of Transportable Pressure Equipment Regulations 2009
- Ionising Radiation (Medical Exposure) Regulations 2000
- Ionising Radiation Regulations 1999


STATUTORY INSTRUMENTS

2017 No. 1322

HEALTH AND SAFETY

The Ionising Radiation (Medical Exposure) Regulations 2017


Work with ionising radiation

Ionising Radiations Regulations 1999

Approved Code of Practice and guidance


STATUTORY INSTRUMENTS

1999 No. 3232

HEALTH AND SAFETY

The Ionising Radiations Regulations 1999

ARRANGEMENT OF REGULATIONS


Working safely with ionising radiation

Guidelines for expectant or breastfeeding mothers

Please refer to relevant departmental Reception processes for more routine acceptance procedure e.g.:

- SR-SOP-RECEPTION
- MB-SOP-REC-SORT
- HI-SOP-RECEPTION

3 Equipment

All specimens should be delivered to the lab in a lead theatre tin marked 'Radioactive'.

All radioactive specimens must be stored within a lead store for 24 hours and or disposed of through Nuclear Medicine directly.

There is a lead store within the histology area of Scarborough. Should there be a requirement for a transport container; this can be obtained from Nuclear Medicine.

In York lead pot(s) for the storage of radioactive samples can be found in Room S2-9 and Fridge 29.

4 Personnel Authorised to Perform Procedure

- These procedures must only be carried out by staff that have been trained and assessed as competent (and recorded on Q-Pulse).
- **It is advisable that where possible pregnant members of staff are not exposed to these samples.**
- Trainee and student staff may carry out these procedures under the direct supervision of a HCPC Registered BMS or similar as above.
- All requests for clinical advice must be referred to a member of the clinical team as appropriate.

5 Sample Requirements (including COSHH Risk Assessment & First Aid)

Disposable gloves and standard PPE (laboratory coat) should be worn when handling all radioactive samples.

Where possible pathological samples (blood, tissue or urine) should not be taken from patients who have received a radioactive injection for diagnostic procedures. All samples taken must be by prior arrangement with the laboratory.

If a sample is received or an enquiry is made please refer the requestor to a Senior member of

Staff.

Advice can be sought from the Nuclear Medicine Team: See numbers in section 1.
All human blood samples and tissues must be treated as potentially BIO-HAZARDOUS.

- Approved Personal Protective Equipment (PPE) including lab coats, gloves and eye-protection (where specified) must be worn when handling open samples or derivatives thereof.

	When performed according to the protocol detailed in this SOP, and in conjunction with adherence to Trust Policies and Good Laboratory Practice, the handling of patient samples represents minimal risk to staff.
	Ionising Radiation Risk is minimal when local rules are followed. Contamination routinely arising from the work is low-level and localised. Airborne contamination is not expected. Any new procedures should be re-reviewed to determine whether the "local rules" criteria outlined above is applicable. Even where the work is "routine", it should be risk assessed to determine whether any additional practical precautions are appropriate.

Exposure to Bio-Hazardous Material

In the event of a needle stick injury or accidental blood splashes to eyes or mouth:

- If skin has been punctured encourage bleeding by gently squeezing. Wash with soap and running warm water then dry and dress the wound.
- Splashes to the eyes: irrigate eyes thoroughly with eye wash / saline
- Splashes to the mouth: gargle with drinking water (avoid swallowing)

Contact the Occupational Health Department / Emergency Department for guidance and report all adverse incidents to your line manager / complete an AIR form.

Disposal of Patient Samples

Samples will potentially remain radioactive for 24 hours. Ensure that they are stored within a lead container or where not available (during routine hours) Nuclear Medicine can be contacted to dispose of the sample on our behalf.

After 24 hours the sample can be disposed of through standard procedure.

6 Chemicals (including COSHH Risk Assessment & First Aid)

GENERAL FIRST AID

The following first aid guidelines may be applied to all the substances detailed in this SOP.

Eyes: Irrigate thoroughly with water. At least 10 minutes is the recommended duration. Sterile saline is also available at the eye wash stations.

Lungs: Remove from exposure, rest and keep warm.

Skin: Wash substance off skin thoroughly with water. Remove contaminated clothing and wash before re-use.

Mouth: Wash out mouth thoroughly with water and give plenty of water to drink.

Remember – If at all concerned about the nature or severity of the problem, SEEK MEDICAL ADVICE.

7 Risk Assessment

The most common radioactive injection currently in use as a marker within this trust is Technetium-99m (Tc99m). The Radioactive Protection Advisor has supplied the following document as an accurate risk assessment for staff exposure to this marker within the laboratory.

Other radioactive material may be used on occasion and advice must be sought from the Radioactive Protection Advisor (contact details stated in section 1).

Given the standard range of precautions in place to restrict dose and the record of minimal radiation doses in clinical processes, the residual risks in most activities will be very small and the conclusions of the risk assessment should reflect this. There should therefore be little requirement for further action over and above the careful application of standard procedures. However, should there be a need to review or explore a particular radiation hazard, then controls to prevent or minimise it will be needed.

COSHH and Risk Assessment

When performed according to the protocol detailed in this SOP, in conjunction with the safety precautions outlined and good laboratory practice, this method presents minimal risk to staff and patients.

8 Method

- The laboratory **must** be contacted prior to receiving any samples containing radioactivity.
- Samples suspect of radioactivity should be referred to Nuclear Medicine for advice if prior arrangement has not been made.
- Samples must be brought directly to the laboratory and must not be received via the pod system.
- Specimens received must be stored in a suitable lead container where available or given to Nuclear Medicine for disposal and or storage.

9 Reporting of Results

- Results should be reported according to the relevant SOP for the procedure or test which it relates to.

10 Reference Ranges

- See relevant SOP according to Procedure performed.

11 Assay Performance & Known Limitations

- The laboratory can only consider precautions for radioactivity when they are informed of the need to perform sample processing for patients following the administration of radioactive markers.
- The laboratory has on occasion received samples with radioactive activity and have been informed retrospectively. If this should happen a full investigation (DATIX) must be performed.