

University Occupational Health and Safety Guidance Notes

TRANSPORT OF RADIOACTIVE MATERIALS

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1. PURPOSE

This document aims to assist departments in meeting the regulatory requirements of legislation, and provide guidance on the safe transport of radioactive material(s) outside of their designated areas, and to ensure that that appropriate control measures are put in place.

All radioactive material must be handled safely and securely to prevent its unintentional release to the environment and to prevent any person being accidentally exposed.

2. TRANSPORT OF RADIOACTIVE MATERIAL

All movements of radioactive materials, whether within a University building, to another University building or off campus, are to be strictly controlled. Any potential spillages of contaminated material have the potential to cause significant harm to personnel, the environment as well as the University's reputation.

Before the movement of radioactive materials may occur, there are several points the Principal Investigator, Research Supervisor or Line Manager will need to consider:

- Authority: If being transported to another person/location, that the person intending to receive the material is permitted and authorised to accept and hold the material.
- Permits: Certain quantities or types of radioactive material require a permit to hold. These are issued by the environmental agency for the country receiving the material. The person sending the material is to ensure they have received confirmation from the receiving person prior to any transfer taking place.
- Isotopes / Quantity: For transfers within the University, departments have strict limits on the isotopes and quantities of materials that they may hold. In the case of internal transfers, the University Radiation Protection Officer (URPO) is to be contacted for this confirmation.

3. RISK ASSESSMENT FOR THE MOVEMENT OF RADIOACTIVE MATERIAL

All movements of radioactive materials must be fully risk assessed before the movement may occur. This risk assessment must take account of the material being transported, the quantity being moved, as well as the route the materials will take.

The person responsible for arranging the move must ensure that a Radiation Risk Assessment (RRA) is completed and approved by the URPA prior to the move. Information on completing an RRA can be found in the OHS Standard – Ionising Radiation (ADD LINK).

4. MOVEMENT OF RADIOACTIVE MATERIAL WITHIN A SINGLE BUILDING

Where radioactive material needs to be transported between areas within a building, the academic responsible for its security is to ensure that the materials are transported securely and safely to their intended destination.

Examples of this could be:

- Material which is to be moved from one lab to another under the same department's control for analysis;
- Radioactive waste that needs to be moved from the storage area within the department to a suitable long-term storage area (e.g. the radiation waste store);
- Collection of a sealed source from its storage location to the area of intended use, and where the source requires to transit through a non-designated area.

5. MOVEMENT OF RADIOACTIVE MATERIAL TO AN OUTSIDE PERSON

Where the intent is to send the material to any outside person (an outside person is anyone where the radioactive material would need to leave the building of origin, be that to another University building or another institute), the academic responsible for the material is to ensure that a suitable company is contracted to carry this out on behalf of the University.

1.1 Transport to another University Building

Where the distance between University buildings is short enough that it may be covered by walking (not in excess of 500m), then this may be allowed where approved by the URPO / URPA and provided that the following is met:

- Ensure there is no risk of an external dose rate in excess of 2.5µSv/hr to anyone along the route of travel.
- Ensure that, should the container be dropped, all material will remain securely within the container.
- In the case of liquid material, ensure an adequate amount of absorbent material is placed inside the container to reduce the spread of potential contamination in the event of a spill.

Only excepted amounts of radioactive material may be transported by hand to another University building on campus.

Excepted packages are limited in the materials or levels of activity that may be transported in this manner and what the actual packaging must consist of. Appendix 1 details the basic requirements for an excepted package.

All transport to other institutes must always be done by courier. Material MUST NEVER be transported to another institution by being carried by a worker / using private transport.

2.1 4.2 Transport by Courier

When materials must be transported to another University building that is sufficiently far enough that it cannot be done due to the risks involved, or where the material is being sent to another institute or company for study or analysis, then a suitable courier is to be contracted to carry out the transport.

It is expected that the majority of all instances of radioactive materials being moved will be done by a suitable contractor on behalf of the University.

Details on companies that specialise in the transport of radioactive materials can be obtained from the URPO. Where a courier is to be used, the URPO is to be informed to ensure that the company is suitable for carrying out the task and that any additional requirements of notification have been completed.

3.1 4.3 Transport by Mail or Parcel

Whilst excepted packages may be sent using mail services within the scope of the regulations, the potential for damage to University reputation from an accident involving this type of material in the postal system is deemed excessive.

No member of University staff is to use the postal system (Public or Private) for the delivery of radioactive materials.

4.1 4.3 Transport by Car or Public Transport

Whilst there are provisions in the applicable regulations to allow for the transport of radioactive material by either private vehicle or by using public transport (bus, train or taxi), the potential for harm or damage to members of public or the University's reputation make this an unappealing choice for the movement of materials.

University staff MUST NOT use their own transport or to engage a mode of public transport in the movement of radioactive materials.

6. OTHER HAZARDOUS PROPERTIES

Where the material to be transported has other potential hazards associated with it (biological, chemical, etc.), this is to be notified to the URPO and the selected company in advance.

Some materials may have additional other requirements associated with its form or hazardous properties and, if so, these may need to be considered by other members of Safety, Health and Wellbeing.

7. APPENDIX 1 – EXCEPTED PACKAGING

Departments may only transport materials by hand throughout the University, provided they meet the requirements of an excepted package.

To be considered excepted, the packaging must meet the following requirements:

- The dose rate at the surface of the package **MUST NOT** exceed 5 μ Sv/hr.
- Non-fixed contamination on the external surface of the package must not exceed:
 - 4Bq/cm² for beta or gamma emitting isotopes;
 - 0.4Bq/cm² for all alpha emitting isotopes.
- The package **MUST** display the word “Radioactive” and the radiation trefoil on the internal surfaces such that, in the event the package is opened, it is immediately visible.
- The package **MUST** be designed so that it can be easily and safely handled and retain its contents under the conditions likely to be found during transport.
- The external features of the package **MUST** be easily decontaminated if necessary.
- The package should not allow the collection of water.
- Any added features of the packaging must not reduce its ability to contain the radioactive material.

No radiation trefoils or other markings identifying the package as radioactive should be on the outside of the package.

For an excepted package, there are maximum allowable limits for all radioisotopes. A selection of the most commonly used within the University are listed in Table 1. Any package containing more than these activities will not be considered excepted, and will require further controls.

Table 1

Radionuclide	Solids & Other Forms (MBq)	Liquids (MBq)
Tritium	40,000	4,000
Carbon 14	3,000	300
Phosphor 32	500	50
Iodine 125	3,000	300
Americium 241	1	0.1

Where the isotope to be moved is not listed, the academic should contact the URPO for further advice.

The Association of University Radiation Protection Officers has an in-depth guidance document on the transport of excepted radioactive packages. Examples of how various sources may be packaged can be found in their document [Transport of Radioactive Materials by Road](#), along with other useful information.