

Radioactive Waste Operating Procedure

1. Scope

This procedure applies to the collection, transport and storage of wastes which have a level of radioactivity. Disposal applies to materials which are below the level of legal prescription as radioactive substances and/or levels prescribed in The University of Queensland Occupational Health and Safety Unit's (OHS) guideline, [Management of Unsealed Radioactive Wastes](#).

IMPORTANT

Waste materials classifiable as prescribed radioactive substances under the Radioactive Substances Regulation will not be handled by Property and Facilities. The management of such material will remain the responsibility of the school or centre in which they are produced.

2. Objectives

- To ensure that radioactive wastes are managed in ways that protect the quality of the environment and the safety of staff, students and the wider community.
- To ensure compliance with the relevant health, safety and environmental legislation and with the national recommendations for the disposal of radioactive wastes.

3. Procedure

3.1 Disposal of Radioactive Waste

Only radioactive wastes below the levels listed in Table 1 can be disposed of.

All other materials must be held by the school or centre of generation until the radioactive content has decayed to the prescribed levels. Isotopes with long half-lives may require specific disposal arrangements. The University Radiation Protection Adviser should be contacted for advice in this regard.

Table 1 lists the procedure for disposal of common types of radioactive wastes. For advice regarding sealed sources and radioactive minerals see Section 3.3 below.

Table 1. Disposal of Common Radioactive Wastes

Waste Type	Disposal Level	Management procedure		Collection	Labelling at disposal
		Below Disposal Level	Above Disposal Level	Container	
Solvent-Based Liquid Scintillants	Less than the concentrations given in Section 12.(1) of the 1999 Regulation See the OHS guideline <i>Management of Unsealed Radioactive Wastes</i>	<ul style="list-style-type: none"> Disposed of through the University Chemical Store as a solvent. Refer to the Chemical Waste Procedure in Section 7A of this manual. 	<ul style="list-style-type: none"> Stored until radiation level decayed to meet disposal level then disposed of as solvent waste. While storing, container shall be labelled with: <ul style="list-style-type: none"> isotope date for safe disposal contact chemical content/nature of solvent When storage is not feasible, (eg, tritium or C14), dilute with clean solvent to less than disposal level then dispose of as solvent. 	<ul style="list-style-type: none"> 5 litre or other appropriate drums supplied by University Chemical Store as per Chemical Waste procedure in Section 10B of the EMS manual 	Do not label as radioactive. Label as solvent as per Chemical Waste procedure in Section 10B of the EMS manual.
Water based liquid Scintillants	Radioactivity less than prescribed in OHS guidelines; <i>Management of Unsealed Radioactive Wastes</i>	<ul style="list-style-type: none"> Disposed of to sewer under supervision of the school or centre's Radiation Safety Officer at designated sink. 	<ul style="list-style-type: none"> Dilute with clean water to less than the applicable guideline level, then dispose of to sewer. Alternatively, these wastes may be stored for decay as for the solvent-based liquids described above 	<ul style="list-style-type: none"> Not applicable. Disposed of to sewer under supervision of RSO. 	Not applicable.
Glass and vials	Radioactivity less than prescribed in OHS guidelines; <i>Management of Unsealed Radioactive Wastes</i>	<ul style="list-style-type: none"> Fluids may be emptied into larger containers for disposal as solvent or liquid based as appropriate. Vials and glass should be disposed of through General waste, Clinical and Related waste or Cytotoxic waste as appropriate. 	<ul style="list-style-type: none"> Vials and glass stored until the radiation level decayed to meet disposal level in <i>Management of Unsealed Radioactive Wastes</i>. While storing, container shall be labelled with: <ul style="list-style-type: none"> isotope date for safe disposal contact name and phone number chemical content/nature of solvent. 	<ul style="list-style-type: none"> Dispose of in black general waste bins as appropriate¹ Dispose of in yellow-lidded Clinical and Related waste bins or purple-lidded Cytotoxic waste bins as appropriate². 	All materials placed in Clinical and Related, Cytotoxic or General waste shall have all radiation labels removed or effectively obliterated.

Waste	Disposal	Management procedure	Collection	Labelling
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¹ Refer to *General Waste Operating Procedure* in EMS Manual.

² Refer to *Clinical and Related Wastes Operating Procedure or Cytotoxic Waste Operating Procedure* in EMS Manual

Type	Level	Below Disposal Level	Above Disposal Level	Container	
Dry Materials (benchkote, gloves, etc)	Radioactivity less than prescribed in OHS guideline; <i>Management of Unsealed Radioactive Wastes</i>	Wastes can be disposed of in General waste or Clinical and Related waste as appropriate.	<ul style="list-style-type: none"> Schools and Centres shall store the wastes until they meet disposal level in <i>Management of Unsealed Radioactive Wastes</i>. While storing, container shall be labelled with: <ul style="list-style-type: none"> isotope date for safe disposal contact name and phone number chemical content/nature of solvent. <ul style="list-style-type: none"> For long half life isotopes, the University Radiation Protection Adviser shall be contacted (Refer to Section 5 of this procedure.) 	<ul style="list-style-type: none"> Dispose of in black General Waste bins as appropriate³. Dispose of in yellow Clinical and Related waste bins or purple-lidded Cytotoxic waste bins as appropriate². 	All materials placed in Clinical and Related or General waste shall have all radiation labels removed or effectively obliterated.

³ Refer to *General Wastes Operating Procedure* in EMS Manual

² Refer to *Clinical and Related Wastes Operating Procedure or Cytotoxic Waste Operating Procedure* in EMS Manual

3.2 Disposal of packaging materials

Before old containers or packages that formerly contained radioactive materials are discarded, it is essential that any radiation labels be removed or effectively obliterated by the user so that unnecessary alarm is not caused. **Should a labelled package be found by a waste contractor or Property and Facilities staff member, the RSO of the School or Centre should be contacted immediately.** Where there is nothing to identify the origin of the package, the University Radiation Protection Adviser should be contacted.

3.3 Note regarding sealed sources and certain other radioactive wastes

Certain radioactive sources such as obsolete sealed sources, radioactive minerals and neutron activated samples cannot generally be disposed of by users. Schools and centres with these types of wastes should contact the University Radiation Protection Adviser for advice. Occasionally, equipment suppliers may agree to accept obsolete sealed sources. NB the approval of the Health Department must be obtained before transferring custody of sources to persons outside the university.

4. Waste Process Responsibilities

4.1 Waste Generators

Radioactive waste generators include post-graduate students, laboratory technicians, research and teaching staff. Persons who use radioactive materials themselves, or who supervise their use by students, are required to be licensed by Queensland Health. Licensees are required to appoint a **Radiation Safety Officer** (RSO). Generally each University School or Centre has one RSO and a deputy to act in their absence. It is the responsibility of licensees to ensure that the procedures described above are followed - generally these will be delegated to the RSO.

NOTE

THE ULTIMATE RESPONSIBILITY FOR CLASSIFICATION, LABELLING AND STORAGE OF RADIOACTIVE WASTES RESTS WITH THE GENERATOR OF THE WASTE.

4.2 Heads of Schools and Centres

- Ensure that students and staff are aware of the operating procedure for radioactive wastes as applicable;
- Provide adequate environmental management safety training; and
- Review the School or Centre waste management program as is necessary.

4.3 Property and Facilities Division

- Liaise with licensees, Radiation Safety Officers and the University Radiation Protection Adviser to ensure that the radioactive waste management is effectively carried out at the University campuses.

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5. Enquiries

Please contact the following for advice regarding radioactive wastes:

Departmental Radiation Safety Officers	Contact the School or Centre concerned	see University Internal Telephone Directory
University Radiation Protection Adviser	Occupational Health and Safety Unit	Ph: (07) 3365 54504
Queensland Health Forensic and Scientific Services	Greg Shaw	Ph: (07) 3000 9900

6. Definitions

6.1 Waste

Under Section 13 of the *Environmental Protection Act, 1994* **waste** is defined as “any gas, liquid, solid or energy (or a combination of wastes) that is surplus to, or unwanted from, any industrial, commercial, domestic or other activity, whether or not of value”.

6.2 Radioactive Wastes

For the purposes of this document, **radioactive wastes** are defined as wastes which, because of their radioactive content, may require specific management arrangements.

6.3 Sealed Sources

Radioactive source sealed in a capsule or having a bonded cover, the capsule or cover being strong enough to prevent contact with and dispersion of the radioactive material under the conditions of use and wear for which it was designed.

7. References

- Australian Standard AS/NZS 2243 Set:2006 Safety in Laboratories
- Building Act 1975
- Environmental Protection Act 1994
- Health Act 1937
- Radiation Safety Act 1999 and Regulation 2010
- Radiation Safety (Radiation Safety Standards) Notice 2010
- Sewerage and Water Supply Act 1949
- Transport Operations (Road Use Management) Act 1995
- OH& S Unit - Management of Unsealed Radioactive Waste 2010
- Workplace Health and Safety Act 1995 and Regulation 2008

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