

Hazardous Waste Disposal

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1.0 Purpose

These guidelines are developed to assist all staff, students, volunteers and visitors who store, use, generate or handle laboratory and other chemical waste while undertaking activities at, or for the University.

2.0 Scope

These guidelines apply to all users who store, use, generate or handle laboratory and other waste.

3.0 Guidelines

These guidelines outline the requirements for the disposal of laboratory and other chemical waste to minimise reactivity, toxicity or risk to persons or the environment during collection, storage, and transportation prior to disposal.

3.1 Waste hierarchy

Hazardous waste disposal must follow the Hazardous Waste Hierarchy, outlined in figure 1 below. That is, the most hazardous waste component is prioritised as described below. When dealing with mixed waste streams it is critical to identify and address all hazards associated with the waste as part of the project risk assessment.

Before generating any waste, the risk assessment information should be read, and the hazardous waste hierarchy and management procedures understood by the personnel handling the waste materials.

Example: animal waste contaminated with radioactive isotopes should be treated as radioactive waste in the first instance and as animal waste, once safe radiation limits have been reached.

All hazardous or regulated waste should be segregated into the categories identified in Hazardous and Regulated Waste Categories and Disposal.

Note: Separate guidelines for the management of clinical and related waste are available. The chemical segregation rule also applies to chemical waste segregation. For waste-related questions, please contact chemical & radiation safety (CRS@griffith.edu.au).

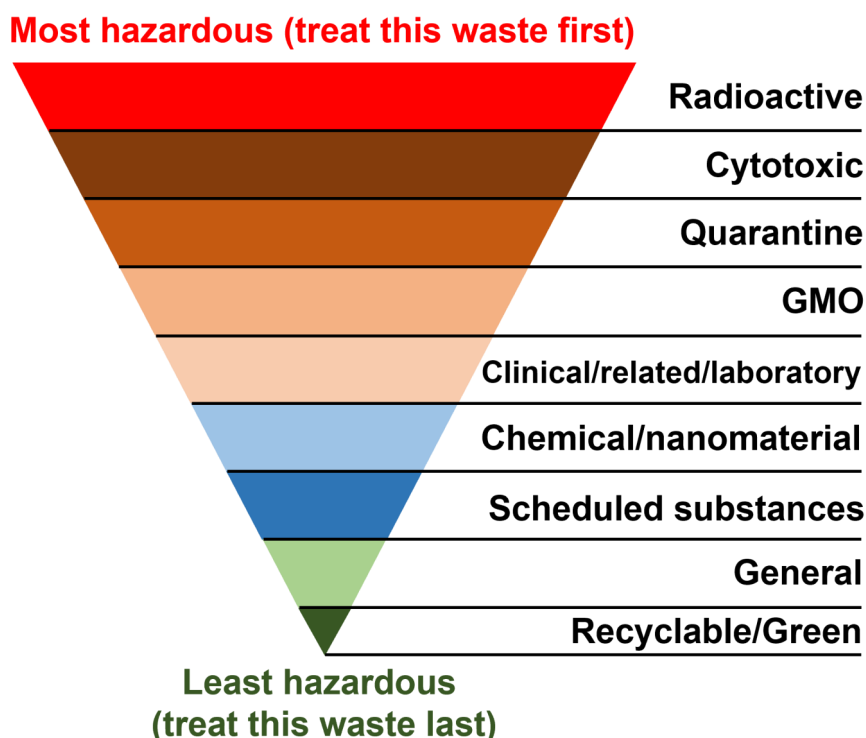


Figure 1 Hazardous waste hierarchy

3.2 Waste category and relevant requirement



Various categories of waste require specific considerations and disposal pathways to comply with local, state, and federal regulations. Each regulation may require specific labelling, transportation, and disposal methods. Griffith University has multiple waste contractors to collect different types of waste generated in the organisation. Table 1 illustrates the hazardous and regulated waste categories and disposal pathways. If the determination of the waste category is not straightforward, please contact CRS (CRS@griffith.edu.au).

To dispose of waste on campus, you will need to follow the below:

- Check the project risk assessment to see how the generated wastes are classified.
- Consider the waste hierarchy to determine the waste category
- Determine the appropriate disposal pathway (e.g. CRW, chemical waste etc)
- For the CRW stream, please refer to the 'Guidelines for the Management of Clinical and Related Waste'.
- If the waste category determination remains unclear, please contact CRS (CRS@griffith.edu.au) and/or UBC (UBC@griffith.edu.au) for further advice.

Note: For chemical waste, please send the chemical waste manifest to CRS (CRS@griffith.edu.au) and the relevant chemical waste collection point for review and to schedule the deposition.

Table 1 Hazardous and regulated waste categories and disposal guide

Waste category	Regulatory category/name	Waste descriptor	Waste disposal requirements	Standard
Radioactive materials 	The disposal stream is selected based on the remaining waste type. Radiation is held until below disposal limits.	Radioactive waste	<p>All radioactive waste must be segregated according to the isotope. Contact the local Radiation Safety Officer (RSO) for advice about waste disposal. Provide details of the isotope, activity, and volume of the material you are seeking to dispose of.</p> <p>*If your local RSO is unavailable, please contact Chemical and Radiation Safety (CRS@griffith.edu.au).</p>	<i>Radiation Safety Regulation 2021</i> Schedule 3.
Cytotoxins 	Clinical and related waste (CRW) stream	Cytotoxic drugs or materials contaminated with cytotoxic drugs	<p>Cytotoxic waste must be placed in secure, purple cytotoxic waste bins with purple liners. Both bin and liner must clearly display the white cell in telophase cytotoxic symbol. Sharps contaminated with cytotoxic chemicals must be placed in similarly purple and labelled sharps containers before being placed in the cytotoxic waste bins.</p> <p>The waste should be disposed of by the worker handling it directly into the secured cytotoxic waste bin.</p> <p>The secured bin should be collected by the cleaner into the designated area for contractor collection.</p>	AS/NZS 2243.3 Guide to Handling cytotoxic drugs and related waste
Quarantine-controlled materials (any material that is regulated by the Department of Agriculture Forestry and Fisheries)	Biosecurity waste (CRW stream)	<p>Waste generated under approved arrangements (formerly Quarantine Approved Premises).</p> <p>Includes any material which has been in contact with quarantine material or waste.</p>	<p>The process for waste management will be detailed in the permit.</p> <p>Quarantine waste must be disposed of in accordance with the Guidelines for the management of clinical and related waste, which requires: decontamination prior to disposal, decontaminated material be disposed of in Yellow Clinical Waste Bins.</p> <p>If you are unsure, contact the university biosafety committee (UBC@griffith.edu.au).</p>	AS/NZS 2243.3 & 2243.4
Genetically Modified Organism (GMO) Waste	Biosecurity waste (CRW stream)	<p>Waste that contains GMOs</p> <p>Including insects, plants, microorganisms, animals</p>		Guidelines for the Transport, Storage and Disposal of GMOs (Office of the Gene Technology Regulator).
Laboratory waste - Clinical	<p>Clinical and related waste (CRW stream)</p> <p>Clinical waste – category (iv) laboratory and</p>	<p>Infectious, biological, clinical, human blood or body fluids, infectious animal</p>	<p>Clinical and related wastes (except human tissue waste*) must be placed in secure, yellow clinical waste bins with yellow lids clearly displaying the black biohazard symbol.</p> <p>All clinical and related wastes (except sharps) must be in yellow liners clearly displaying the black biohazard symbol before being placed in bins.</p>	AS/NZS 2243.3

	associated waste directly resulting from the processing of specimens.	carcasses or material	Sharps contaminated with clinical hazards in addition must be placed in similarly yellow and labelled sharps containers before being placed in the clinical and related waste bins. The waste should be disposed of by the worker handling it directly into the clinical waste bin.	
Laboratory waste - Human tissue waste	Clinical and related waste (CRW stream)	Human tissue (tissue, blood and other body fluids)	The lid of the bin must be locked and then the bin taken to the designated area for contractor collection.	AS/NZS 2243.3 Best Practice Guideline Queensland Health
	Clinical waste – category (iii) human tissue waste	Excluding human body parts and other anatomical waste under the <i>Tissue Donor Act</i>	Cleaners collect the CRW bin and store it in some designated collection points around all campuses for contractor's pick up. Please check the bin collection days at your workplace.	
Laboratory waste – Animal waste	Clinical and related waste (CRW stream)	Animal tissue including carcasses, body parts, blood, or bedding.	* Human tissue bins are the same as clinical waste but with an orange lid.	AS/NZS 2243.3 & 2243.4
	Clinical waste – category (i) animal waste			
Laboratory waste – Sharps	Clinical and related waste (CRW stream)	Scalpel blades, syringe needles, lances, contaminated glassware		AS/NZS 2243.3
	Clinical waste – category (ii) discarded sharps			
Laboratory waste– related wastes	Related waste (CRW stream)	Anything else that is contaminated with laboratory waste such as tissue culture flasks, petri dishes, consumables (e.g. gloves, filters, tips/tubes) and glassware.		AS/NZS 2243.3 and 2243.3.10
Chemical waste	Chemical waste from research or teaching activity.	Chemical- (solid and liquid) including materials contaminated with chemical residues.	Chemical waste remains a chemical and it must be managed as per handling, using and disposing of chemicals procedure.	AS/NZS 2243.3
	Various other categories are based on properties.	Nanomaterials.	<u>Sewerable chemicals</u> Check if your waste meets general conditions, concentration limits and volume limits acceptable to discharge to sewer based on the location of campuses: Nathan, Mt Gravatt & South Bank Campuses: <i>Queensland Urban Utilities (QUU) Trade Waste Sewer Acceptance Criteria</i> ; Logan Campus: <i>Trade Waste Sewer Admission Standard of Logan City Council</i> ; Gold Coast Campus: <i>Sewer Admission Standards of Gold Coast City Council</i> .	

Relevant SDSs will assist in assessing your waste.

If acceptable, wastes may be poured down laboratory or workshop sinks or other purpose-built sewer connections.

Unacceptable wastes must be disposed of as non-sewerable chemicals.

Note: Dilution waste to meet discharge criteria is NOT ACCEPTABLE. The waste must satisfy discharge criteria when they are poured into a sink, drain or other sewer connection. Methods of neutralisation can be used, otherwise, the waste must be treated as non-sewerable: e.g. corrosives can be neutralised to balance the pH; some toxics can be rendered safe.

Non-sewerable chemicals

Non-sewerable chemicals have to be disposed of as hazardous chemical waste.

Chemical containers – glass and plastic

If possible, reuse empty chemical containers to collect compatible waste. When disposing of chemical containers:

Ensure the item has been removed from the Chemical Inventory Management System (CIMS) (scan into waste)

Triple-rinse the container

Please note: the rinse may need to be collected as chemical waste (refer to the local government sewer admission standard based on the location of campus to determine what can be disposed of *via* the sink)

Remove or deface the label, so that it is not possible to identify what was in the container.

Place the plastic containers into the yellow wheelie bin located at your workplace.

Place glass containers into the blue drums located in N20_0.02 and G24_2.04A area.

If you cannot do any of the above send it out as chemical waste.

Nanomaterials			All nanomaterials should be disposed of as hazardous chemical waste unless a risk assessment demonstrates there is no risk to the environment or human health.	
Scheduled Substances	Medicines and Poisons (CRW stream)	Medicines and Poisons	Contact chemical and radiation safety (CRS@griffith.edu.au) to arrange the disposal of all regulated Scheduled Substances. If you are unsure, please contact your local Scheduled Substance Coordinator (SSC).	Queensland <i>Medicines and Poisons (Medicines) Regulations 2021.</i>

3.3 Waste disposal pathways

The types of waste generated at your workplace will determine the most appropriate disposal pathways. Some of the pathways are further explained to provide process and clarity.

3.3.1 Chemical Disposal to sewer via workplace sinks

In some cases, it is permissible to dispose of chemicals via waste sinks, provide it is in accordance with the sewer admission standard set by the local government based on campus location. Please note that many substances are strictly prohibited from being disposed of via the sink such as Organic Solvents, therefore, it is important to confirm the appropriate waste disposal method defined by the Safety Data Sheet (SDS) of the substance. Careful consideration must be given to ensure that incompatible chemicals are not allowed to mix and that reactivity issues with plumbing/drains (i.e. Polyvinyl Chloride (PVC), High-density polyethylene (HDPE) or metal) are considered.

3.3.1.1 Alkaline and acidic substances

Many acids and bases can be safely disposed of via sink using the neutralization method. It is imperative that persons are appropriately trained before conducting this method. Neutralizing acid solutions cautiously to pH 6 – 10 using an appropriate base solution can be done whereas neutralisation of alkaline solutions can be done by altering pH cautiously to pH 6-10 using an appropriate acid solution. Neutrality must be confirmed using pH test strips/papers, or pH meter prior to discharge.

3.3.1.2 Other substances

Some miscible organic and inorganic substances may be disposed of into the sewer (via laboratory sink) subject to compliance with Local Wastewater Admission Standards. Such materials must be water soluble, of low toxicity, non-flammable and in concentrations lower than the permitted maximum levels. Waste that would require excessive dilution to achieve discharge threshold standards, should be bulk stored for disposal by a specialist waste contractor. A flush of water must follow disposal, to prevent ingress of vapours into the laboratory.

Waste should be discharged via a sink within a fume cupboard if possible. In periods of water shortage, the preferred option is to dispose of the materials via regular waste collections by the contracted disposal company.

3.3.2 Chemical Disposal to holding tanks via waste sinks

In some locations, (e.g. G40 Anatomy) liquid chemical waste is collected in holding tank(s). The waste tanks are pumped out by a waste contractor on a regular basis. The level of waste in these tanks is monitored via the Building Management System (BMS). Campus Life (CLF) monitors waste levels in the holding tanks via the BMS and arranges collection as required.

3.3.3 Chemical Disposal to atmosphere

It may be possible to dispose of vapours or gases using fume cupboards, depending on the nature of the chemical. Refer to the relevant Safety Data Sheet (SDS). This method is limited to non-toxic, non-dangerous substances and in minimal quantities, which are not combustible, and do not present health or environmental hazards.

3.3.4 Chemical Disposal via commercial contractor

Substances that cannot be disposed of via the methods listed above must be appropriately segregated and stored in preparation for collection by a specialist chemical waste contractor. Contact chemical and radiation safety (CRS@griffith.edu.au) for more details.

3.3.4.1 Chemical Waste Collection Notification

The Chemical and Radiation Safety (CRS) team, within Health, Safety and Wellbeing (HSW), coordinates with the waste disposal contractor and circulates the chemical waste disposal calendar for the entire year. In some circumstances, additional out-of-calendar waste disposal can be organised and communication from CRS to stakeholders. The Local Chemical Waste Contact Personnel in turn notify the technical support and research/teaching staff contacts in their areas.

3.3.4.2 Storage – prior to collection

Prior to collection, the chemical waste should be segregated according to the dangerous goods class or division and chemical compatibility (e.g. flammable, corrosive, or oxidizing agents etc). Depending on the chemical's properties and volume, you can use either of the following disposal vessels:

- i. Dangerous Goods grade plastic drum; and/or
- ii. Glass Winchester bottles

When filling flammable waste bottles, ensure there is sufficient vacant head space (~30%) to allow for volatility and expansions, as containers may explode. Ensure all waste containers are firmly sealed.

Where practicable, waste should be progressively transferred to collection stores when containers are full, to avoid accumulation in laboratories. Once items are transferred to a collection point to await disposal, please send an updated manifest to chemical and radiation safety (CRS@griffith.edu.au) to enable accurate records of holdings in the locations to be maintained. Waste should be discharged via a sink within a fume cupboard if possible. In periods of water shortage, the preferred option is to dispose of the materials via regular waste collections by the contracted disposal company.

4.0 Definitions

GMO refers to genetically modified organism

RSO refers to radiation safety officer

CRW refers to the clinical and related waste

CIMS refers to Chemical Inventory Management System

5.0 Information

Title	Hazardous Waste Disposal Guidelines
Document number	2024/0001113
Purpose	These guidelines are developed to assist all staff, students, volunteers and visitors who store, use, generate or handle laboratory and other chemical waste while undertaking activities at, or for the University.
Audience	Staff
Category	Operational
Subcategory	Research Safety Risk & Integrity
UN Sustainable Development Goals (SDGs)	This document aligns with Sustainable Development Goals: 3: Good Health and Well-Being 12: Responsible Consumption and Production
Approval date	1 October 2024
Effective date	1 October 2024
Review date	2029
Policy advisor	Senior Chemical Safety Manager
Approving authority	Director, Health and Safety

6.0 Related Policy Documents and Supporting Documents

Legislation	<i>Radiation Safety Regulation 2021</i> <i>Queensland Medicines and Poisons (Medicines) Regulations 2021</i> <i>Transplantation and Anatomy Act 1979</i>
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Policy	N/A
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Procedures	N/A
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Local Protocol	N/A
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Forms	N/A
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