

HAZARDOUS WASTE



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1 SUMMARY

This Code of Practice outlines the management and disposal of hazardous waste from University of Reading premises. Further guidance can be obtained from Sustainability Services.

Website: www.reading.ac.uk/sustainability

Telephone: 0118 378 6968/ 6837

Email: waste@reading.ac.uk

Waste is defined as hazardous if it might be harmful to human health or the environment.

All hazardous waste must be segregated appropriately, handled, stored correctly and kept secure. It must be transferred to a registered and authorised waste contractor for transport and eventual disposal to a site authorised to receive it.

Hazardous waste must not be put into the University's general waste collections, whether into an office bin, skip or recycling collection.

Wherever practicable, waste hierarchy principles must be adopted in order to minimise the generation of hazardous waste. This includes costing and assessing at planning and procurement stages of (materials and equipment) as to how much hazardous waste might be generated and its disposal. Appendix 5 shows the stages of waste hierarchy and a link to the government advice on how to apply it.

- All hazardous waste must be segregated at source by the producer of the waste.
- Waste must be stored safely, securely and must not be allowed to 'escape' or be accessed by unauthorised persons.
- It must be correctly labelled with information about the contents and marked as hazardous.
- Hazardous waste must be collected by a registered and authorised hazardous waste carrier who has been approved by Sustainability Services and Procurement.
- It is illegal to mix hazardous waste with non-hazardous waste. It is also illegal to mix hazardous waste of different types (categories) without an environmental permit.
- The producer (i.e. a departmental representative) will be asked to sign the consignment note at the point of transfer to the carrier – this is a legal requirement. This consignment note must be sent in the internal post to the Sustainability Services for legal compliance purposes and a photocopy taken for local records.
- There is a legal duty to minimise waste, and to reuse and recycle where practicable (the 'waste hierarchy'). Before disposing of waste, producers must confirm that they have considered the waste hierarchy and taken action to comply with it. This is achieved by the person or department which has produced the waste signing a declaration on the consignment note.
- Estates and Facilities (E&F) (Sustainability Services) are responsible for providing a hazardous waste service to the University, they select competent and licensed waste disposal carriers and companies. Sustainability Services complete the Duty of Care audits on the University's approved waste contractors and store consignment notes.
- Waste producers in Schools/ Directorates must co-operate with E&F and Procurement policies to enable the University to comply with hazardous waste legislation.

Key Definitions

Waste Producer – an individual or School/Function that generates the waste.

Waste Holder - an individual or School/Function who stores the waste.

Consignee – the person to whom the waste will be transferred for recovery or disposal.

Waste Carrier - a person/company who transports waste between sites. Must be licensed by the Environment Agency (EA).

Waste Consignment Note – A document signed by the consignor and countersigned by the carrier as a proof that the collection of hazardous waste has occurred.

Waste Contractor – this is referring to the University's approved waste management contractor who is often also the waste carrier and consignee.

2 SCOPE

This Code of Practice explains the procedures for safely transferring hazardous waste from all University sites to approved waste carriers for final disposal/ recovery. It also covers the process for “holding” (storage) of waste prior to collection.

This Code of Practice covers:

- Potentially hazardous liquids discharged via the foul water drainage system, including from laboratory sinks.
- Chemically hazardous solids, liquids and gases (including contaminated consumables) arising from laboratory activities, academic activities, maintenance work or similar activities.
- Biologically hazardous waste and certain clinical wastes (including contaminated consumables) – for more detailed guidance on treating and handling clinical and biological waste prior to off-site disposal see Safety Code of Practice 14 Part 7.
- Certain electrical equipment classed as hazardous waste.
- and waste hazardous flammable liquids/ materials where the requirements of the Dangerous Substances (Explosive Atmospheres) Regulations also apply – see Safety Guide 24

This Code of Practice excludes:

- Emissions to air from ventilation stacks etc,
- Disposal of waste radioactive materials (RAM) (see Safety Guide 16–19 for information on RAM).
- Animal by-products.
- Decommissioned explosives.
- Asbestos Waste – please see the Asbestos Management Plan and speak to the Asbestos Co-ordinator (ext. 8275)
- Non-hazardous wastes

Proper management of hazardous waste can save money by reducing the quantities of waste, and can reduce the University's impact on the environment. Failing to do so may result in damage to

the environment, place human health at risk, and / or lead to enforcement action against the University and individuals.

There are legal requirements on the University as a waste 'producer' and on the individuals whose work generates the waste. For the purposes of this Code, 'producer' is defined as an individual or department that generates the waste. A 'holder' is defined as an individual or School/Function who stores waste.

3 WHAT IS HAZARDOUS WASTE?

Waste is defined in the Waste Framework Directive as "any substance or object which the holder discards or intends or is required to discard"

Generally, waste is hazardous if it, or the materials or substances it contains, are harmful to human health or the environment.

Hazardous waste comes in many different shapes and forms, and includes materials and equipment commonly found in offices, as well as in laboratories, workshops and on farms.

A list of common hazardous wastes found at the University and their disposal routes can be found in Appendix 1.

Guidance:

For all enquiries regarding waste and hazardous waste please contact Sustainability Services at waste@reading.ac.uk or ext. 6968/6837.

OR see the gov.uk website for help on assessing if your waste is hazardous - <https://www.gov.uk/how-to-classify-different-types-of-waste>

3.1 Office environment

In an office environment, the following waste items are likely to be classed as hazardous waste:

- Electrical equipment with potentially harmful components such as cathode ray tubes, e.g. computer monitors and televisions
- Fluorescent light tubes and energy-saving light bulbs
- All batteries
- Refrigerators containing harmful greenhouse gases or ozone-depleting substances
- Solvents, e.g. aerosols
- Mercury-containing devices

3.2 Laboratories, workshops and maintenance activities

In addition to the types of waste found in offices, laboratories and workshops are likely to generate other hazardous wastes, including:

- Solvents
- Laboratory chemicals and chemical waste
- Oils (except edible oils) e.g. engine oil

- Acids and alkalis
- Sludge
- Pesticides
- Chemically contaminated glassware, plastics and broken glass
- Contaminated sharps
- Compressed gas cylinders (containing hazardous gases, and not returnable to the supplier)
- Chemically contaminated lab gloves, tissues or other consumables which require incineration
- Most paints and inks
- Refrigerators and equipment containing harmful greenhouse gases or ozone-depleting substances
- Electronic and other equipment.
- Mercury containing devices

Guidance:

Mercury waste from broken mercury-containing devices should be collected using an appropriate spill kit, placed in a sealed container, and stored for disposal. HSS can assist with this. Furnishings contaminated with mercury may need to be disposed of as hazardous waste – consult Safety Note 32 or contact H&SS.

3.3 Waste from University farms

University farms should follow the guidance on good agricultural practice, including hazardous waste management that has been published by Defra:

'Protecting our water, soil and air: A Code of Good Agricultural Practice for farmers, growers and land managers'.

Examples of farm wastes that are classified as hazardous include waste oil, asbestos, lead acid batteries and agro-chemicals containing dangerous substances.

4 RESPONSIBILITIES AND DUTY OF CARE

Waste regulations apply to the University as an organisation, and to any individual who generates hazardous waste.

The University and individuals, as waste holders, have a legal Duty of Care to take all reasonable steps to ensure that when transferring waste to another waste holder/ carrier the waste is managed correctly throughout its journey to disposal or recovery.

For more information about waste Duty of Care, please see the guidance on Sustainability Services Webpage: https://www.reading.ac.uk/closed/cleanandgreen/cag2-EnvPolicyProceduresGuidance_Closed.aspx

Also, please see Defra's Waste Duty of Care Code of Practice 2016 for more information. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/506917/waste-duty-care-code-practice-2016.pdf

4.1 Staff and students

Staff and students that handle hazardous waste have the responsibility for safe and compliant segregation, handling, labelling, storing and transporting of hazardous wastes (e.g. laboratory chemicals) between point of production, and stores/point of removal by the University's approved waste contractor.

Staff and students **must** follow the procedures set out in this Code of Practice, as well as local rules, Area Health and Safety Codes etc. These internal processes help to ensure that individuals and the University are complying with relevant waste management legislation, and waste must be correctly transferred to the approved waste carrier. Individuals as well as the University can be prosecuted for failure to comply with the law.

4.2 Heads of Schools/ Functions

Heads of Schools/Functions are responsible for ensuring that:

- Schools have local guidance in place on how to handle hazardous waste. Local procedures are formulated in compliance with University policy and UK legislation and are understood and complied with by staff and students.
- The University's approved waste contractor (who is a licenced waste carrier) is used or the University Procurement policy followed to ensure that the waste carrier/ disposal company has been assessed prior to selection. Use of any other companies for hazardous waste disposal, means that all the 'Duty of Care' responsibilities will fall on the person or department raising the order with the alternative waste carrier. See the University's Waste Duty of Care Procedure available on the Sustainability Services Website.
- Staff are adequately competent and/or suitably trained for the management of hazardous wastes

4.3 Technical Services

- Support the 'higher hazard' Schools by providing detailed guidance in the form of Local Rules which outline procedures for compliant handling, segregation where appropriate, labelling, storing and transporting of hazardous wastes (e.g. laboratory chemicals) between the point of production and waste stores/the point of removal by the University's approved waste contractor.
- Deliver training sessions and provide guidance to School staff who are responsible for compliant handling, segregation where appropriate, labelling, storing and transporting hazardous wastes (e.g. laboratory chemicals) between the point of production and the waste stores/point of removal by the University's approved waste contractor.
- Ensure that Technical Services staff are trained and adequately competent for dealing with hazardous wastes.

4.4 Health and Safety Services

- Providing the Safety Codes of Practice for Hazardous Waste, advice and guidance on the safety element of the segregation, handling, internal storage and holding of the waste.
- Advising on the safe transport of hazardous waste.

4.5 Estates and Facilities

Maintenance Services are responsible for;

- Maintaining of the infrastructure of facilities used for the storage of hazardous materials.

Sustainability Services are responsible for:

- Selecting competent and licenced waste management contractors, waste carriers and waste disposal services along with the Procurement Department
- Liaising with the approved waste contractor and arranging waste collections from departmental storage. This includes arranging for the waste contractor to provide packaging where appropriate.
- Checking the Waste Carrier Licences for all University approved waste contractors.
- Auditing, identifying corrective actions and supporting the improvement of hazardous waste management on campus. This includes assistance with identifying training needs, identifying suitable external training courses and provision of internal training based on the contents of this code of practice when resources allow and if requested.
- Registering the University as a lower tier waste carrier.

5 PRACTICAL HAZARDOUS WASTE MANAGEMENT

This section provides a summary of waste management practices that must be adopted at the University.

In addition, Appendix 1 summarises the waste disposal streams for the different types of hazardous waste typically found at the University.

Safety Code of Practice 14 Part 7 sets out the arrangements for clinical and biological waste.

5.1 Storage of hazardous waste

All Heads of Schools and Functions must ensure that any waste (including chemical waste) generated is stored safely and securely within the department (including external stores) pending collection by either the University's Clean & Green Team (for most office items classed as hazardous) or directly by the University's approved waste contractor.

5.1.1 Limits on storage

Waste can only be stored at one of the following locations:

1. At the place of production (i.e. at the place of work where it is generated by the producer, in the workshop, laboratory, farm etc)
2. At designated hazardous waste collection points on campus for the purposes of recovering or disposing of the waste elsewhere e.g. to allow bulking up, compacting, recycling collection points etc.

Waste cannot be stored for longer than 12 months without a permit (please refer to the Environmental Permitting Regulations 2016). This time limit applies from the day the waste is generated.

All other circumstances require a permit from the Environment Agency for waste operations – please contact Sustainability Services (waste@reading.ac.uk) to discuss if required.

5.1.2 Secure storage

All hazardous waste kept on University premises, even for a short time, must be kept secure. This means staff must:

1. Ensure that hazardous waste is managed by a suitably qualified and/or experienced person.
2. Store waste safely and securely, taking all reasonable precautions to prevent any uncontrolled releases, leaks or spills that have the potential to cause pollution, and to prevent unauthorised persons (including members of the public) accessing the waste.
3. Keep liquid hazardous waste in a dedicated area, preferably inside a building with an impermeable bund or barrier to contain spills and leaks.
4. Limit the access to storage areas, either by restricting the availability of keys or a sign in/out system to staff with the appropriate level of training.

5.1.3 Store management controls and procedures

1. Regularly check storage areas for potential risks, e.g. for leaks, deteriorating containers etc.
2. Display written instructions for storing and disposing of hazardous waste.
3. Maintain an inventory of chemical hazardous wastes kept on the premises, and where they are stored - this will help the emergency services to deal with any incident effectively and safely.
4. Assess risks posed by any hazardous substances that are stored, including hazardous waste, and take steps to control those risks.

5.1.4 Separation and segregation

Incompatible materials (especially chemicals) must be kept separate. For oxidising and flammable substances this means in a separate store from each other.

Incompatible chemicals can be kept in the same store but must be physically separate e.g. in different parts of the store. This is only acceptable if the materials are not likely to leak or come into contact. For example, oxidising and corrosive substances.

Different types of hazardous waste must also be kept separate e.g. fluorescent tubes and car batteries.

The mixing of hazardous waste is prohibited you must segregate waste, or items of waste, of different types.

You must not mix:

- a hazardous waste with non-hazardous waste or materials
- different types (categories) of hazardous waste with each other
- waste oils with different characteristics

Examples of

- Oxidising agents – chlorates, chromates, dichromates, hypochlorites, nitrates. Nitric acid nitrites, perchlorates, permanganates, peroxides
- Flammables – acetone, ethanol, ethyl acetate, hexane, methano

If you do wish to mix hazardous waste, you must apply for an environmental permit and demonstrate that the mixing of these wastes is the best available technique.

Source: <https://www.gov.uk/guidance/hazardous-waste-segregation-and-mixing>

5.1.5 Packaging and containment

The producer must ensure that each item of hazardous waste is adequately contained so that it cannot leak or spill, either during transport to, or while in, the store. This may require double containment, secure lids etc.

5.1.6 Labelling chemical hazardous waste

Each container must be labelled at the point of production to indicate that it is hazardous waste.

The label for chemical waste must include the following;

- The type of material
- Its hazardous properties (HP Code)
- The quantity
- The date that the waste was generated or placed in storage
- The producer's contact details (name, department, telephone number, email etc.)

See Appendix 3 for an example of a hazardous waste label. Labels can be obtained from Sustainability Services.

Final packaging and labelling for transport will be undertaken by the University's approved waste contractor. No hazardous waste should leave the University without a coded waste label.

5.1.7 Non-chemical hazardous wastes

Each container must be labelled as "hazardous waste".

The following information must be made available when booking a collection;

- The type of material
- The quantity
- The producer's contact details (name, department, telephone number, email etc.)

Final packaging and labelling for transport will be undertaken by the University's approved waste contractor. Sustainability Services may request further information to ensure compliant disposal

e.g. hazardous properties. No hazardous waste should leave the University without the required information.

5.1.8 Flammable liquids

For information on the handling and storage of flammable liquids, which are also classed as hazardous waste please see [Safety Code of Practice 24 Dangerous Substances, and the Explosive Atmospheres Regulations 2002 \(DSEAR\) \(Including Flammable Liquids\)](#).

5.1.9 Storage conditions

Hazardous waste stores must:

1. Be kept in good condition,
2. Have intact impermeable floors so that any spillage (solids or liquids) cannot escape and cause land or groundwater contamination, or further deterioration of floors.
3. Have appropriate signage to warn of hazards and tell users what can, and cannot, be stored. Where incompatible substances are kept in the same store but are physically separate from each other, these areas should have clear signage.
4. Have adequate ventilation at high and low level (above secondary containment)
5. Have sufficient space and storage systems to enable products to be segregated, especially if they are incompatible and would react if mixed.
6. Where practical, be designed to minimise manual handling e.g. ramped access to enable trolleys to be used for heavy loads, shelving at suitable heights etc.
7. Be lockable, and kept locked, with access only to authorised persons.
8. Have sufficient space for any drums/containers which could be damaged or corrode if the store were to be flooded to be stored off the floor on racking, plastic pallets etc.

Fume Cupboards:

Hazardous waste should not be stored in fume cupboards.

Allowing chemicals to evaporate via fume cupboard is not an appropriate method of waste disposal and is not permitted.

5.1.10 Storage site location and design

Consideration should be given to:

1. The quantity of waste produced or likely to be produced
2. Location of the store in relation to where the waste is produced.
3. Whether stores are inside or outside the building
4. Environmental sensitivity of the site, including underlying groundwater for external stores
5. Nature of the product, e.g. toxicity, persistence

6. Impermeability and resistance of the floor and other containment features to corrosion/ attack from materials stored
7. Fixed fire-fighting systems and fire water containment
8. Fire resistance, including the effects of fire on the containment (DSEAR)
9. Protection from vandalism, unauthorised use and arson
10. Protection from flooding.

5.2 Transport on the University estate

For this Code of Practice, “transport” is defined as the movement of waste by any method between one location and another. It includes movement using vehicles, as well as manual handling by individuals. It includes small scale transport (e.g. movement of items from a cupboard to a bench in the lab) and over larger distances (e.g. between buildings on campus).

Whenever hazardous waste is being moved the following steps must be taken;

- Ensure that waste is labelled before it is transported.
- Use sealed containers to prevent spillages.
- When transporting waste outside of laboratory spaces (including between labs) you must use secondary containment in case the primary containment fails. It is good practice to consider secondary containment within laboratory spaces as well where practicable. **Wire Winchester carriers do not constitute a form of secondary containment.**
- Limit the distance travelled, arrange waste collections directly from the building or the closest hazardous waste store.
- When using trolleys, be aware of potholes or irregular surfaces which could cause containers to tip over. Either ensure trolleys provide adequate secondary containment themselves or ensure that waste items already have their own secondary containment.
- Waste chemicals should not be moved between campuses or other University-owned sites. These should be collected by the University’s waste contractor from the site of origin.
- Ensure you are aware of emergency spill procedures and location of spill kits prior to transport.

Hazardous waste can only be transferred or carried between different University sites if the carrier is registered with the Environment Agency.

Transport of waste chemicals by staff or students on public roads is strictly prohibited.

5.3 Waste consignment and disposal

All hazardous waste must be transported offsite for disposal by the University’s approved waste contractor who is also a registered waste carrier. This is arranged through Sustainability Services.

Waste must be accompanied by a consignment note that follows the Environment Agency format guidelines. The consignment note must be signed by the consignee (See Key Definitions in

Section 1) and the waste carrier. Please see the University's Waste Duty of Care Procedure for more information.

Waste must be sent to a facility that holds a suitable environmental permit or a registered exemption that authorises them to take that type of waste.

5.3.1 University hazardous waste disposal service

To dispose of any hazardous waste, please contact Sustainability Services directly or your local representative as outlined in your local procedures, who will liaise with Sustainability Services to identify the most appropriate disposal route for the waste. Sustainability Services provide the following services;

Biannual and Ad-hoc Liquid/Chemical Waste collections:

Sustainability Services will provide a form to the waste producer, which needs to be completed before the collection is arranged. The form requires the following information;

- 1) The hazard category code of the substance e.g. HP1, HP2, HP3A etc. Guidance on Hazard codes for the properties which render the waste hazardous are in Appendix 2; or contact Sustainability Services.
- 2) The name(s) of the hazardous substances(s) contained and concentrations where known.
- 3) The number, capacity and type of containers of each item (e.g. 22.5 litre can, 225 litre drum etc.)
- 4) The total quantity of each hazardous substance involved (in grams or kilograms for solids, and millilitres or litres for liquids as appropriate) **excluding** the containers
- 5) The name and telephone extension of the person with whom Sustainability Services or the waste disposal company can liaise regarding the collection of wastes; and
- 6) A project code (for recharging of costs to the School/Function).

Prior to collection the waste producer must ensure that;

- 1) The waste is labelled with the yellow hazardous waste label available from Sustainability Services.
- 2) The containers are in good condition and are sealed and free from leaks or surface contamination
- 3) **The items to be collected do not contain unknown substances.** These cannot be legally accepted by the University's waste contractors – however it may be possible for the waste contractor to analyse unknown substances with prior arrangement.
- 4) **The items to be collected do not contain radioactive or biologically active substances** – these need to be disposed of via a separate route. Contact Health and Safety Services for advice.

Any waste which does not meet these requirements will not be accepted for disposal. Chemically contaminated, or potentially contaminated consumable items should also be disposed of using this service.

The waste carrier will complete a consignment note on behalf of the producer, including categorisation and description of the waste. The waste must be accompanied by the consignment note until it reaches its final destination.

The waste producer must sign the consignment note and associated confirmation that they have applied with Waste Hierarchy for dealing with their waste. This means the producer must consider reusing or recycling the waste before deciding to dispose of it.

For the Biannual hazardous waste collection: The University's waste contractor will take all copies of the consignment note and will return one copy to the Sustainability Team. Copies must be kept for three years.

For Ad-hoc hazardous waste collections: The University's waste contractor will leave a copy of the consignment note with the waste producer (person who signed it). A photocopy must be taken for local records, and the original sent to Sustainability Services. Copies must be kept for three years.

5.3.2 Clinical waste disposal service

Clinical wastes may be classed as hazardous waste if they are infectious and/or cytotoxic and cytostatic medicines. For more detailed guidance on treating and handling clinical and biological waste (including biologically contaminated, or potentially contaminated consumable items) prior to off-site disposal, please see Safety Code of Practice 14 Part 7.

Information about the definition of clinical waste and healthcare waste can be found on the gov.uk website:

Health Technical Memorandum 07-01: Safe management of healthcare waste:

<https://www.gov.uk/government/publications/guidance-on-the-safe-management-of-healthcare-waste>

If clinical waste is classified as hazardous waste then separate disposal will need to be arranged with Sustainability Services. Sustainability Services will then liaise with the University's waste contractor to arrange collection and disposal.

5.3.3 Disposal of other items classed as hazardous waste – waste electrical, fluorescent tubes, large batteries etc.

Disposal of common hazardous waste items (e.g. cathode ray tube (CRT) monitors, fluorescent bulbs etc.) is mostly managed by Sustainability Services, however please check if local arrangements are in place. The University's Porters (Clean and Green Team) collect and store items for bulk collections. Large, very heavy or unusual laboratory items may be collected directly by the University's waste contractor. Please contact Sustainability Services (waste@reading.ac.uk) to arrange disposal.

6 EMERGENCY RESPONSE PROCEDURES

Any area where hazardous waste is stored must have emergency procedures clearly defined. This procedure must include;

- Roles and responsibility.
- Procedures for responding to an incident.
- Location of spill kits, PPE and other equipment.
- Contact details of emergency responders (to include sufficient contingency contacts if primary contacts cannot be reached).

- Procedures for reporting and investigating the incident.
- Process for communicating and training the emergency procedures.
- The location of surface water and foul water drains should be noted when considering spills outside the building.

7 STAFF TRAINING

Staff must be appropriately trained to do the following, and training records should be maintained by the line managers or nominated person;

- Identify hazardous wastes.
- Handle and store them safely
- Understand the local hazardous waste management procedure
- Deal with the spills of hazardous materials that are stored locally. This should include instructions on what to do if there is a spill, the type of personal protection equipment required and how to correctly dispose of contaminated clean-up materials. PPE and any equipment needed for a clean-up must be kept readily available. Where Schools or Functions transport hazardous liquids between buildings or to external stores, it is a requirement that their spill response procedure will also cover spills that occur outside the building.

8 LIQUID WASTE DISPOSAL VIA SINKS, DRAINS AND SURFACE WATER

Material which enters the University foul water drains (trade effluent) goes via the public sewage system to Thames Water treatment plant. Material which enters the surface water drains goes (depending on location) either to the public sewage system or to controlled waters (e.g. rivers, streams, lakes and groundwater). The water company has confirmed that at present the University does not need a Trade Effluent Consent, hence **any discharge to the sewerage system must:**

- Comply with Section 111 of the Water Industry Act 1991
- Not present a risk to the health and safety of workers on the sewage system or effluent treatment plant
- Not damage the sewage system
- Cause harm to the environment

Under no circumstances should:

Dilution and sink disposal be used as a means of disposing of hazardous liquids that should otherwise be collected, bulked up and disposed of via the University's waste contractor (or in the case of unused substances, returned to the supplier where practical)

Under no circumstances should:

Any liquid wastes, hazardous or not, be poured into external drains as they could be surface water drains that drain directly into local water courses.

It is the responsibility of the Heads School or Function to ensure that discharges to drains complies with the points above. If they are undertaking activities which require a trade effluent consent it is the responsibility of the School or Function to notify the Sustainability Services so that suitable arrangements can be made.

8.1 Laboratory liquid waste

The following substances are **strictly NOT permitted** to be discharged to drains:

- Substances **harmful** to humans or the environment (see Appendix 4).
- **Solids, sludges or viscous substances.**
- **Grease or oil.**
- **Solid chemicals.**
- **Flammable or explosive** – including solutions with greater than 24% alcohol content, and a variety of solvents.
- **Hazardous, non-miscible solvents.** Suitable residue containers should be available, with segregation and separate collection of halogenated and non-halogenated solvents for ultimate incineration. Containers of solvent residues must not be allowed to accumulate in laboratories and fume cupboards; they must be returned to the designated store at frequent intervals. Vented caps should be used on storage vessels to release any gradual build-up of pressure in the waste solvent bottles.
- **Corrosive chemicals** - Liquids that have a pH less than or equal to 5 or greater or equal to 9.
- **Reactive chemicals** - Liquids that could result in an explosion, heat generation, or toxic gas release. Examples include: cyanides, azides, oxidizers, water reactive, and air-reactive chemicals.
- **Toxic chemicals** - Chemicals that have an LD50 less than 500 mg/kg OR are identified as carcinogenic, mutagenic, or teratogenic.
- **Heavy metals.**
- Substances on the **'Black' or 'Red' Lists**, as set out in Appendix 4.

Flushing these substances down the drain with lots of water is NOT allowed. 'Dilute and disperse' is not acceptable practice.

Exceptions:

- **Biological agents, or materials suspected to have biological agents e.g. body fluid etc. and GMOs** – must be inactivated by a validated autoclave or disinfectant process before discharging down the sink – see Code of Practice 14 Part 7.
- **Biological media and cultures** – these must not significantly affect the bacteriological quality of the receiving waters. This is usually achieved by limiting the quantity of materials such as samples, culture supernatants, culture media and buffers. In normal teaching and research laboratory practice, sink discharge is permissible. However, if a new work stream/project is likely to generate large quantities of material that could affect the quality of the receiving waters (for example 'industrial' scale quantities of culture media containing proteins and salts), the Sustainability Services should be contacted as water company advice and consent may be required. See also Appendix 4.
- **Radioactive substances** must not be disposed of in laboratory sinks unless the sink is designated for radioactive waste and disposal is in accordance with the University permit conditions. See Safety Guide 19 Working with open sources of radiation.

The UK Sewerage Undertakers (Water Companies) have published guidance on waste water discharges for the healthcare sector, including hospitals. This may be helpful in some situations, where there is a parallel between healthcare and University work practices. If relevant, the water company guidance may be followed. 'National Guidance for Healthcare Waste Water Discharges' can be downloaded at:

<http://www.water.org.uk/publications/water-industry-guidance/national-guidance-healthcare-waste-water-discharges>

If the water company guidance and information from other sources, such as Manufacturer's Safety Data Sheets is contradictory, the more stringent precautions should be followed.

Disposal by evaporation should be avoided. Fume cupboards are not to be used as a means of disposing of volatile, hazardous substances used in experimental work or produced during experimental work.

Guidance:

Discharges via University sinks to the public sewer are not currently controlled by a Trade Effluent Discharge consent, since work is small scale laboratory experiments with a large dilution factor. However, if any waste falls outside the parameters above, or if there is any doubt about is suitable to go down the drain, the Sustainability Team should be contacted for to arrange any relevant discharge consents.

8.2 Disposal of dilute liquid wastes from farms

Under no circumstances can sheep dip or pesticide washings be disposed to ground or surface waters. An authorisation from the Environment Agency is needed before they can be disposed onto land.

In certain situations, used dip may be disposed to a licensed landfill site or an authorised incinerator. Pending disposal, the used dip must be held in a suitable storage facility until collected by a registered waste carrier. A registered waste disposal contractor, such as the University's approved waste contractor, may also take away surplus sheep dip concentrate, products that have passed their label expiry date and empty containers, if their return to the manufacturer is not a viable option.

9 FURTHER ADVICE AND INFORMATION

The Sustainability Services website provides general information on waste disposal services. The Sustainability Team can be contacted on extension. 6968/6837 or email waste@reading.ac.uk.

Further advice on the prevention of pollution and handling of hazardous materials is available on the Government website at: <https://www.gov.uk/dispose-hazardous-waste>

See Environment Agency guidance (this guidance has been withdrawn but remains a good starting point for planning spill prevention and response procedures).

- PPG 22: Dealing with spills
- PPG 26 Drums and intermediate bulk containers

Technical Guidance WM3: Waste Classification - Guidance on the Classification and Assessment of Waste:

<https://www.gov.uk/government/publications/waste-classification-technical-guidance>

Classification, Labelling and Packaging of Substances Regulations:

<http://www.hse.gov.uk/chemical-classification/legal/clp-regulation.htm>

National Guidance for Healthcare Waste Water Discharges:

<http://www.water.org.uk/publications/water-industry-guidance/national-guidance-healthcare-waste-water-discharges>

Management and Disposal of Healthcare Waste:

<https://www.gov.uk/government/publications/guidance-on-the-safe-management-of-healthcare-waste>

BS EN 12740:1999 Biotechnology - Laboratories for Research, Development and Analysis – Guidance for Handling, Inactivating and Testing Of Waste. BSI.

Appendix 1: Common hazardous wastes and their disposal routes

DESCRIPTION	EWC CODE	DISPOSAL ROUTE
In some locations, local procures may apply.		
Cathode ray tube (CRT), flatscreen (plasma or LCD)	16-02-13*	Collected by Porters and stored ready for bulk collection. Log a disposal request via this link: http://edmsapp1:2000/_layouts/15/LogHelpDeskCall/Disposal.aspx
Fluorescent light tubes containing mercury.	20 01 21*	Log a disposal request via this link: http://edmsapp1:2000/_layouts/15/LogHelpDeskCall/Disposal.aspx
Vehicle and other large or lead-acid batteries		Request assistance from Sustainability Services – waste@reading.ac.uk
Small domestic type batteries and accumulators	20 01 33*	Send to the Post Room in an envelope marked 'Batteries, Post Room, Whiteknights House'.
Lead Batteries	16 06 01*	
Ni-Cd batteries	16 06 02*	
Refrigerators containing ozone-depleting substances	16 02 11* (commercial)	Request assistance from Sustainability Services – waste@reading.ac.uk
Aerosols	16 05 04*	Request assistance from Sustainability Services – waste@reading.ac.uk
Printer toner	08 03 17*	Collection boxes available in building foyers and porters cabins. Contact waste@reading.ac.uk for a box.
Mercury-containing devices	16 03 07*	Contact H&S on Ext 7000 for assistance with risks to human health from broken thermometers. Please also check local procedures.
Waste Paints (solvents)	08 01 11*	Request assistance from Sustainability Services – waste@reading.ac.uk

Waste Mineral Oil	13 02 08*	Hazardous waste biannual collection or request an ad-hoc collection via Sustainability Services – waste@reading.ac.uk
Small mixed waste electricals containing hazardous components	20 01 35*	Please check items with Sustainability Services first, then log a disposal request via this link: http://edmsapp1:2000/_layouts/15/LogHelpDeskCall/Disposal.aspx
Waste chemicals and solvents	Various – see WM3 guidance	Hazardous waste biannual collection or request an ad-hoc collection via Sustainability Services – waste@reading.ac.uk . See also section 6.2.1 of this document.
Cytotoxic and cytostatic medicines	20 01 31*	Request assistance from Sustainability Services – waste@reading.ac.uk
Sludge / oily waters / oils from interceptors.	13 05 03* 13 05 06* 13 05 07*	Request assistance from Sustainability Services – waste@reading.ac.uk
<p>An extensive list of hazardous wastes and how to categorise them can be found in:</p> <p>Technical Guidance WM3 - Guidance on the classification and assessment of waste - https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/427077/LIT_10121.pdf</p>		

Appendix 2: Hazardous Properties

Wastes on the European Waste Catalogue are hazardous if they have one or more of the following hazardous properties: Extract from Waste Classification: *Guidance on the classification and assessment of waste (1st edition 2015)* p12-16. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/427077/LIT_10121.pdf

Hazard statement	Description	Hazard Class and Category In Table 3.1 of CLP		Threshold ²	Hazardous Property
H200	Unstable explosives	Unst. Expl	n/a	See Appendix C1	HP 1
H201	Explosive; mass explosion hazard.	Expl.	1.1	See Appendix C1	HP 1
H202	Explosive, severe projection hazard	Expl.	1.2	See Appendix C1	HP 1
H203	Explosive; fire, blast or projection hazard	Expl.	1.3	See Appendix C1	HP 1
H204	Fire or projection hazard.	Expl.	1.4	See Appendix C1	HP 1
H205	May mass explode in fire.	Expl.	1.5	See Appendix C15	HP 15
H220	Extremely flammable gas.	Flam. gas	1	See Appendix C3	HP 3
H221	Flammable gas.	Flam. gas	2	See Appendix C3	HP 3
H222	Extremely flammable aerosol.	n/a	n/a	See Appendix C3	HP 3
H223	Flammable aerosol.	n/a	n/a	See Appendix C3	HP 3
H224	Extremely flammable liquid and vapour.	Flam. Liq.	1	See Appendix C3	HP 3
H225	Highly flammable liquid and vapour.	Flam. Liq.	2	See Appendix C3	HP 3
H226	Flammable liquid and vapour.	Flam. Liq.	3	See Appendix C3	HP 3
H228	Flammable solid.	Flam. Sol.	1	See Appendix C3	HP 3
H230	May react explosively even in the absence of air	Chem. Unst. Gas	A	n/a	n/a
H231	May react explosively even in the absence of air at elevated pressure and/or temperature	Chem. Unst. Gas	B	n/a	n/a
H240	Heating may cause an explosion.	Self-React.	A	See Appendices C1 & C3	HP 1 HP 3
		Org. Perox.	A		
H241	Heating may cause a fire or explosion.	Self-React.	B	See Appendices C1 & C3	HP1 HP 3
		Org. Perox.	B		

Table 2.1 Hazardous properties and hazard statement codes

Hazard statement	Description	Hazard Class and Category In Table 3.1 of CLP		Threshold ²	Hazardous Property
H242	Heating may cause a fire.	Self-React.	C, D, E, F	See Appendix C3	HP 3
		Org. Perox.	C, D, E, F		
H250	Catches fire spontaneously if exposed to air.	Pyr. Liq.	1	See Appendix C3	HP 3
		Pyr. Sol.	1		
H251	Self-heating; may catch fire.	Self-heat.	1	See Appendix C3	HP 3
H252	Self-heating in large quantities; may catch fire.	Self-heat.	2	See Appendix C3	HP 3
H260	In contact with water releases flammable gases which may ignite spontaneously.	Water-react.	1	See Appendix C3	HP 3
H261	In contact with water releases flammable gases.	Water-react.	2	See Appendix C3	HP 3
H270	May cause or intensify fire; oxidiser.	Ox. Gas	1	See Appendix C2	HP 2
H271	May cause fire or explosion; strong oxidiser.	Ox. Sol.	1	See Appendix C2	HP 2
H272	May intensify fire; oxidiser.	Ox. Sol	2, 3	See Appendix C2	HP 2
H280	Contains gas under pressure; may explode if heated.	n/a	n/a	n/a	n/a
H281	Contains refrigerated gas; may cause cryogenic burns or injury.	n/a	n/a	n/a	n/a
H290	May be corrosive to metals.	Met. Corr.	1	n/a	n/a
H300	Fatal if swallowed.	Acute Tox.	1	Sum (0.1%)	HP 6
		Acute Tox.	2	Sum (0.25%)	HP 6
H301	Toxic if swallowed.	Acute Tox.	3	Sum (5%)	HP 6
H302	Harmful if swallowed.	Acute Tox.	4	Sum (25%)	HP 6
H304	May be fatal if swallowed and enters airways.	Asp. Tox.	1	Sum (10%)	HP 5

Hazard statement	Description	Hazard Class and Category In Table 3.1 of CLP		Threshold ²	Hazardous Property
H310	Fatal in contact with skin.	Acute Tox.	1	Sum (0.25%)	HP 6
		Acute Tox.	2	Sum (2.5%)	HP 6
H311	Toxic in contact with skin.	Acute Tox.	3	Sum (15%)	HP 6
H312	Harmful in contact with skin.	Acute Tox.	4	Sum (55%)	HP 6
H314	Causes severe skin burns and eye damage.	Skin Corr.	1A	Sum (1%)	HP 4 & 8
		Skin Corr.	1B, 1C	Sum (5%)	HP 8
H315	Causes skin irritation.	Skin Irrit.	2	See Appendix C4	HP 4
H317	May cause an allergic skin reaction.	Skin Sens.	1	Ind. 10%	HP 13
H318	Causes serious eye damage.	Eye Dam.	1	Sum (10%)	HP 4
H319	Causes serious eye irritation.	Eye Irrit.	2	See Appendix C4	HP 4
H330	Fatal if inhaled.	Acute Tox.	1	Sum (0.1%)	HP 6
		Acute Tox.	2	Sum (0.5%)	HP 6
H331	Toxic if inhaled.	Acute Tox.	3	Sum (3.5%)	HP 6
H332	Harmful if inhaled.	Acute Tox.	4	Sum (22.5%)	HP 6
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.	Resp. Sens.	1	Ind. 10%	HP 13
H335	May cause respiratory irritation.	STOT SE	3	Ind. 20%	HP5
H336	May cause drowsiness or dizziness.	STOT SE	3	n/a	n/a
H340	May cause genetic defects	Muta.	1A, 1B	Ind. 0.1%	HP 11
H341	Suspected of causing genetic defects	Muta.	2	Ind. 1%	HP 11
H350	May cause cancer	Carc.	1A, 1B	Ind. 0.1%	HP 7

Hazard statement	Description	Hazard Class and Category In Table 3.1 of CLP		Threshold ²	Hazardous Property
H351	Suspected of causing cancer	Carc.	2	Ind. 1.0%	HP 7
H360 ⁽¹⁾	May damage fertility or the unborn child	Repr.	1A, 1B	Ind. 0.3%	HP 10
H361 ⁽¹⁾	Suspected of damaging fertility or the unborn child	Repr.	2	Ind. 3%	HP 10
H362	May cause harm to breast-fed children.	Lact.	n/a	n/a	n/a
H370	Causes damage to organs	STOT SE	1	Ind. 1%	HP 5
H371	May cause damage to organs	STOT SE	2	Ind. 10%	HP 5
H372	Causes damage to organs	STOT RE	1	Ind. 1%	HP 5
H373	May cause damage to organs	STOT RE	2	Ind. 10%	HP 5
H400	Very toxic to aquatic life.	Aquatic Acute	1	See Appendix C14	HP 14
H410	Very toxic to aquatic life with long lasting effects.	Aquatic Chronic	1	See Appendix C14	HP 14
H411	Toxic to aquatic life with long lasting effects.	Aquatic Chronic	2	See Appendix C14	HP 14
H412	Harmful to aquatic life with long lasting effects.	Aquatic Chronic	3	See Appendix C14	HP 14
H413	May cause long lasting harmful effects to aquatic life.	Aquatic Chronic	4	See Appendix C14	HP 14
H420	Harms public health and the environment by destroying ozone in the upper atmosphere	Ozone	1	See Appendix C14	HP 14
EUH 001 ⁽³⁾	Explosive when dry.	n/a	n/a	See Appendix C15	HP 15
EUH 006 ⁽³⁾	Explosive with or without contact with air.	n/a	n/a	n/a	n/a
EUH 014 ⁽³⁾	Reacts violently with water.	n/a	n/a	n/a	n/a
EUH 018 ⁽³⁾	In use may form flammable/explosive vapour-air mixture.	n/a	n/a	n/a	n/a
EUH 019 ⁽³⁾	May form explosive peroxides.	n/a	n/a	See Appendix C15	HP 15
EUH 029 ⁽³⁾	Contact with water liberates toxic gas.	n/a	n/a	See Appendix C12	HP 12

Hazard statement	Description	Hazard Class and Category In Table 3.1 of CLP		Threshold ²	Hazardous Property
EUH 031 ⁽³⁾	Contact with acids liberates toxic gas.	n/a	n/a	See Appendix C12	HP 12
EUH 032 ⁽³⁾	Contact with acids liberates very toxic gas.	n/a	n/a	See Appendix C12	HP 12
EUH 044 ⁽³⁾	Risk of explosion if heated under confinement.	n/a	n/a	See Appendix C15	HP 15
(EUH 059)	Replaced by H420	See H420	See H420	See H420	HP 14
EUH 066 ⁽³⁾	Repeated exposure may cause skin dryness or cracking.	n/a	n/a	n/a	n/a
EUH 070 ⁽³⁾	Toxic by eye contact.	n/a	n/a	n/a	n/a
EUH 071 ⁽³⁾	Corrosive to the respiratory tract.	n/a	n/a	n/a	n/a

Notes:

1: H260 and H260 may be accompanied by the letter D, d, F, f, or a combination thereof. The letters do not alter the hazardous waste assessment.

2: Thresholds indicate either

- Ind. X%, where 'Ind.' means that the concentration of the individual hazardous substance is compared to the threshold
- Sum (X%), where 'Sum' means that the concentration of all hazardous substances with that hazard statement (and where relevant, hazard category) are added together to compare to the threshold.
- Reference to Appendix C, means refer to appendix C of this document for additional information. This be because:
 - (i) A test of the waste is required
 - (ii) A calculation is required, or
 - (iii) The concentration of substances with more than one hazard statement are added together to compare to a threshold

3: 'EUH' hazard statements are additional hazard statements listed in the Labelling section of Table 3.1 of the CLP. They are only assigned to a substance that already has another hazard statement code. A waste that contains a substance with an additional hazard statement code has additional handling risks that need to be identified, even if they are not considered for waste classification purposes.

Physical Hazards (HP1, HP2 and HP3) and concentration effects - The hazard class, category and statement codes assigned to a substance normally relate to the substance in its pure (100%) form. If a substance is not pure or is present as a component of a mixture the same physical hazards may not apply. As an example, ethanol is classified as Flam. Liq. 2: H225, which indicates that at 100% concentration it will have a flashpoint less than 23°C. However, an aqueous waste containing 4% w/w ethanol, will have a flashpoint greater than 60°C, and so will not display hazardous property HP 3 "Flammable". Where liquid wastes are concerned a flashpoint determination is probably appropriate to identify whether the waste is flammable or not.

Appendix 3: Example of hazardous waste labels

HAZARDOUS WASTE

Please see H&SS Code of Practice 48 for guidance

CONTENTS

Technical name:

Hazardous code:

Quantity of material:

Container size:

pH:

PRODUCER

Name: _____ Date: _____

Room number: _____

Department: _____

Contact details: _____ L8

CHEMICAL WASTE

CONTENTS:

PRODUCER:

Name: _____

Department: _____

Date: _____ L9

Appendix 4: Prescribed substances that must not be discharged to drain

The European Commission 'Black List', from the Dangerous Substances Directive 76/464/EEC

Organohalogen compounds and substances which may form such compounds in the aquatic environment

Organophosphorus compounds

Organotin compounds

Substances in respect of which it has been proved that they possess carcinogenic in or via the aquatic environment

Mercury and its compounds

Cadmium and its compounds

Persistent mineral oils and hydrocarbons of petroleum origin, and (for the purpose of implementing Articles 2, 8, 9 and 14 of this Directive) persistent synthetic substances which may float, remain in suspension or sink and which interfere with any use of the water.

The "Red List" from the UK Trade Effluent (Prescribed Processes and Substances) Regs 1989

Mercury and its compounds

Cadmium and its compounds

gamma-Hexachlorocyclohexane

DDT

Pentachlorophenol

Hexachlorobenzene

Hexachlorobutadiene

Aldrin

Dieldrin

Endrin

Carbon Tetrachloride

Polychlorinated Biphenyls

Dichlorvos

1,2-Dichloroethane

Trichlorobenzene

Atrazine

Simazine

Tributyltin compounds

Triphenyltin compounds

Trifluralin

Fenitrothion

Azinphos-methyl

Malathion

Endosulfan

PLUS

Substances generated by:

any process for the production of chlorinated organic chemicals

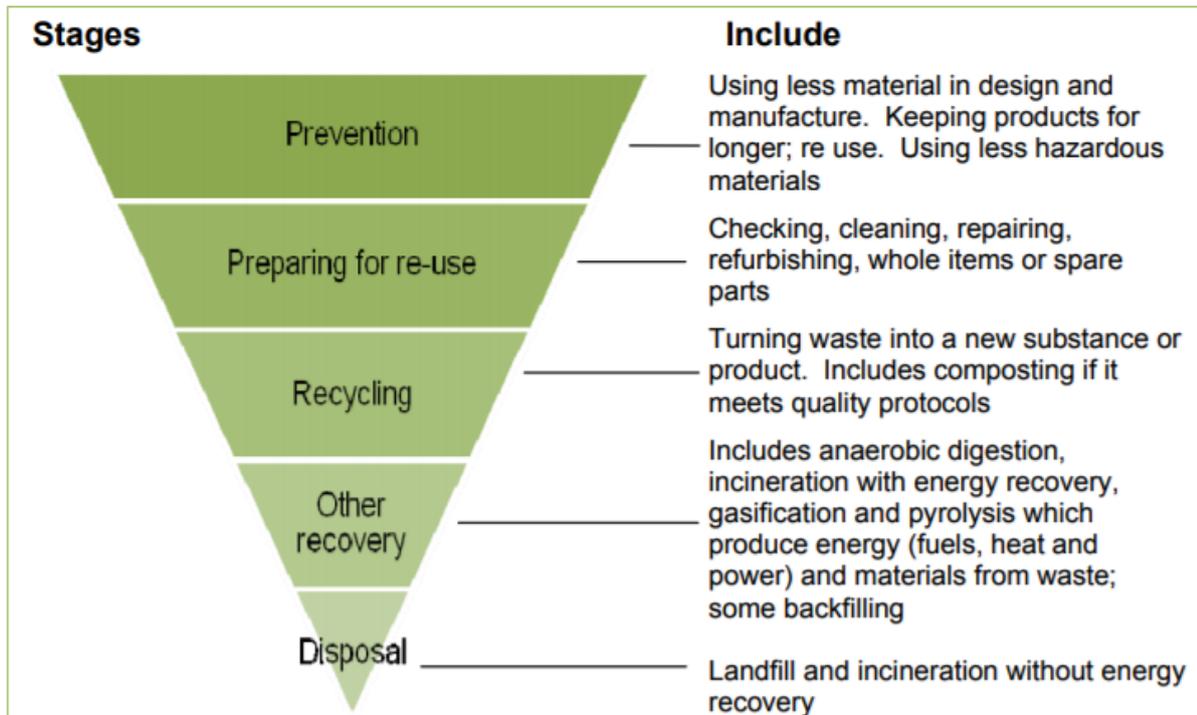
any process for the manufacture of paper pulp

any industrial process in which cooling waters or effluents are chlorinated

any process for the manufacture of asbestos cement

any process for the manufacture of asbestos paper or board

Appendix 5: Waste hierarchy



Reference:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/69403/pb13530-waste-hierarchy-guidance.pdf

Appendix 6: Version control

VERSION	KEEPER	REVIEWED	APPROVED BY	APPROVAL DATE
1	H&S	Every four years	H&S Committee	01/05/2013
2	H&S	Every four years	H&S Committee	10/05/2018