

REPORT

on

Lab Waste Management

Asutosh College oversees the proper management of laboratory wastes in accordance with all local, state, and institutional regulations. Adhering to these regulations, as well as good management practices, ensures that the college is operating to protect the safety and health of all members of the respective department and to protect research, equipment, facilities and the environment.

Types:

Laboratory waste is classified as hazardous or non-hazardous and each has different procedures for disposal

A] Non-hazardous:

The majority of non-hazardous materials discarded from UCL's laboratory activities are recyclable (as mixed dry recyclables).

a) Laboratory Recyclables:

These materials include (but are not limited to):

- Packaging for lab consumables
- Paper
- Hand towels
- Pipette tip boxes
- Cardboard
- Other dry non-hazardous laboratory wastes

You will be provided with a clear bag bin liners. When the Laboratory Recycling bins become full, please seal bags and place them in the designated laboratory waste collection point. These will then be transferred to the building's designated waste collection point by our cleaning contractors.

b) Glass from laboratories:

Glass could include laboratory glassware (Pyrex) or chemical/solvent bottles (Eurobottles, Winchesters)

Any glassware that is contaminated with hazardous materials, and which cannot reasonably be decontaminated, must be disposed of as hazardous laboratory waste.

Disposal of laboratory glassware

Broken laboratory glassware should be disposed of in a laboratory sharps bin. **Larger items** of laboratory glassware that don't constitute a sharps hazard should have any metal, rubber or plastic fittings removed before being put carefully into one of the green glass recycling bins located around the respective department.

c) Biological waste:

Biological waste is any material that contains or has been contaminated by a biohazardous agent. It is of following types:

- Animal wastes generated from animal based practical classes
- Microbiology and biotechnology wastes.
- Plant wastes generated from botanical laboratories
- Waste sharps like hypodermic needles, syringes, scalpels and broken glass.

d) E-waste:

- The E waste collected is stored in store room and disposed every year accordingly.
- The buyback system is followed for pharmacology rotating drums beyond repairable condition. Empty toners, cartridges, outdated computers and electronic items are sold as scrap to ensure their safe recycling.
- Old monitors and CPUs are repaired by the technician and reused.

B] Hazardous laboratory waste:

Hazardous wastes are listed below and must be disposed of in accordance with the relevant procedures.

a) Chemical waste:

- Unused and surplus reagent-grade chemicals.
- Intermediates and by-products generated from research & educational experiments.
- Batteries.
- Anything contaminated by chemicals.
- Used oil of all types.
- Spent solvents - including water-based.
- Mercury-containing items.

b) Clinical waste: Not applicable here

c) Radioactive waste: Not applicable here

d) Laboratory waste of unknown hazard:

If you are unsure if an item of laboratory waste is hazardous or not, please raise a service request with the customer helpdesk team. The item should be labelled as 'hazardous' and separate from other waste for assessment by the waste management team.

Miscellaneous waste

a) Polystyrene boxes:

Polystyrene boxes must be free from hazards prior to disposal. Large polystyrene boxes must be taken to the laboratory waste collection point.

b) Large packaging:

Large packaging must be clean and free from hazards prior to disposal and hazard warning symbols must be obliterated.

Inner packaging should be removed and either be placed in a laboratory recycling bin, or put into a clear bag and taken to a laboratory waste collection point.

Outer packaging should be folded and taped closed so as to reduce the volume of material to be handled, and then taken to a laboratory waste collection point

c) Laboratory equipment:

d) If the unwanted laboratory equipment is in good working order, please keep them in proper place.

e) If it's not in good working order please raise a service request with the customer helpdesk to have this removed.

f) Unwanted laboratory equipment must be free from chemical, biological or radiochemical hazard prior to reuse, recycling or disposal.

e) Gas cylinder:

Unwanted gas cylinders should be returned by the department to their original supplier. This is important as often suppliers will charge rental on the cylinders and once they leave the department they become more difficult to track down and return. Should the department be unable to return the cylinder to the supplier then they should raise a service request with the customer helpdesk so the cylinder can be repatriated to the correct supplier or emptied of all gas and then recycled as scrap metal.

Management:

Waste materials are managed to avoid their adverse effect on human health and the environment. The method of waste management is differing from its property.

Tips for Laboratory Waste Management

Managing laboratory waste doesn't have to be time-consuming or complex, but it should be consistent with best practices and regulations. Even the most minor changes in procedure can greatly impact the amount of waste generated from your laboratory.

Here are some suggestions to help manage hazardous waste output:

- Keep inventories up to date with thorough record-keeping.
- Make substitutions for chemicals whenever possible.
- Try to avoid purchasing chemical materials in bulk quantities
- Recycle as many agents as possible – some common examples of laboratory materials that can be distilled, filtered, or recycled include xylene, formalin, and ethyl alcohol.
- Reduce the size and number of the containers you're using (if you find that you aren't regularly filling them).

- Manage all chemicals as if they were hazardous to ensure there is no possibility of contamination.
- Make sure you are storing all hazardous waste in the appropriate storage containers.
- Confirm that each container holding hazardous laboratory waste is appropriately labeled with the correct details for what's inside.
- Regularly train students in safety procedures for adding waste to and removing from storage containers.

Management Procedure:

Based on the above-mentioned details all the laboratories are used different bins to collect their waste materials. Coloured bins are used for this purpose with the following guidelines:

Colour of bins	Red	Blue	Green	Yellow	Black
Materials disposed	Plastic bottles, gloves, infected plastics, used or discarded bags, Microbiology cultures etc	Glass items, needles, syringes, blades, used and unused sharps	Residual plant parts, food waste, office waste, plastic materials, cardboard general waste	Animal parts, items contaminated by blood or fluids, solid cotton etc	All non-hazardous miscellaneous wastes, paper wastes etc.

Details of bins used by departments:

Management of laboratory wastes is done by three processes:

1] Waste segregation (WS)

2] Neutralization (N)

3] Off-site recycling (OR)

Based on the different laboratory waste materials following is a list of bins used by different departments:

Name of the department	Characterizing lab waste	No. of Bins used					Managing processes
		R	B	G	Y	BL	
Botany	Plastics, bottles, glass goods, plant parts, chemicals, microbiology cultures, miscellaneous	1	1	1	-	1	WS
Zoology	Residual animal bodies, chemicals, food items, autoclaved media, eppendorf, glass items, plastic materials	1	1	1	1	1	WS
Chemistry	Chemicals, glass materials, gas cylinders, miscellaneous etc	1	1	1	1	1	OR
Microbiology	Autoclaved culture media, discarded bags, glass items, needles, food waste, cotton, glass goods, plastic goods, paper waste	1	1	1	1	1	WS
Environmental Science	Chemicals, biological waste	1	1	1	1	-	WS
Geology	Papers, food items, plastics, e-wastes	1	1	-	-	1	WS
Geography	Papers, electrical wire waste, miscellaneous	-	-	1	-	1	OR
Biochemistry	Microbial culture media, residual pathological samples, Eppendorf, glass goods, plastics, miscellaneous	1	1	1	1	1	WS
Computer	Empty toners, cartridges, outdated computers, and electronic items and miscellaneous	-	-	1	-	1	OR
Physics	Electrical wire waste, papers, miscellaneous	-	-	1	-	1	WS & OR
Electronics	E-waste, papers, miscellaneous	-	-	1	-	1	OR

Every month survey:

The Lab-waste management committee make survey every month to the laboratory based departments and check the following details:

A] Marking/labelling laboratory waste

- LIDS: Are all containers securely closed with proper lids?

- LEAKS: Are containers in good condition and stored in secondary containment to capture any leaks?
- LABELS: Are the containers properly labelled with contents and accumulation start date?
- LOCATION: Is the storage area in compliance with labelling as waste area, unobstructed access to emergency equipment, no trip hazards or leaks etc?