

# Waste

Trinity College generates 2,000 tonnes of general waste and 50 tonnes of hazardous waste every year.

Reducing waste is a key part of sustainable laboratory practices. Adopting responsible waste management not only ensures compliance with legal and institutional requirements, but also significantly reduces the environmental footprint of research activities.

## Why focus on waste?

By managing waste responsibly, we can:

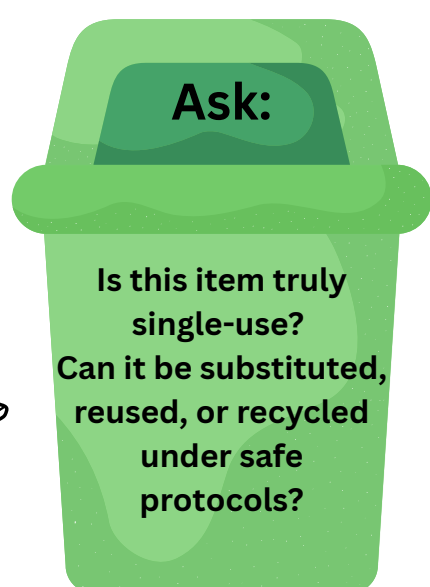
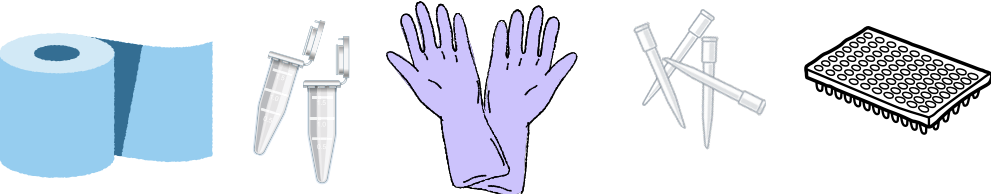
- ✔ Protect ecosystems and human health
- ♻️ Reduce landfill contributions and pollution
- 🌱 Foster a culture of sustainability within the research community

## Understanding lab waste streams

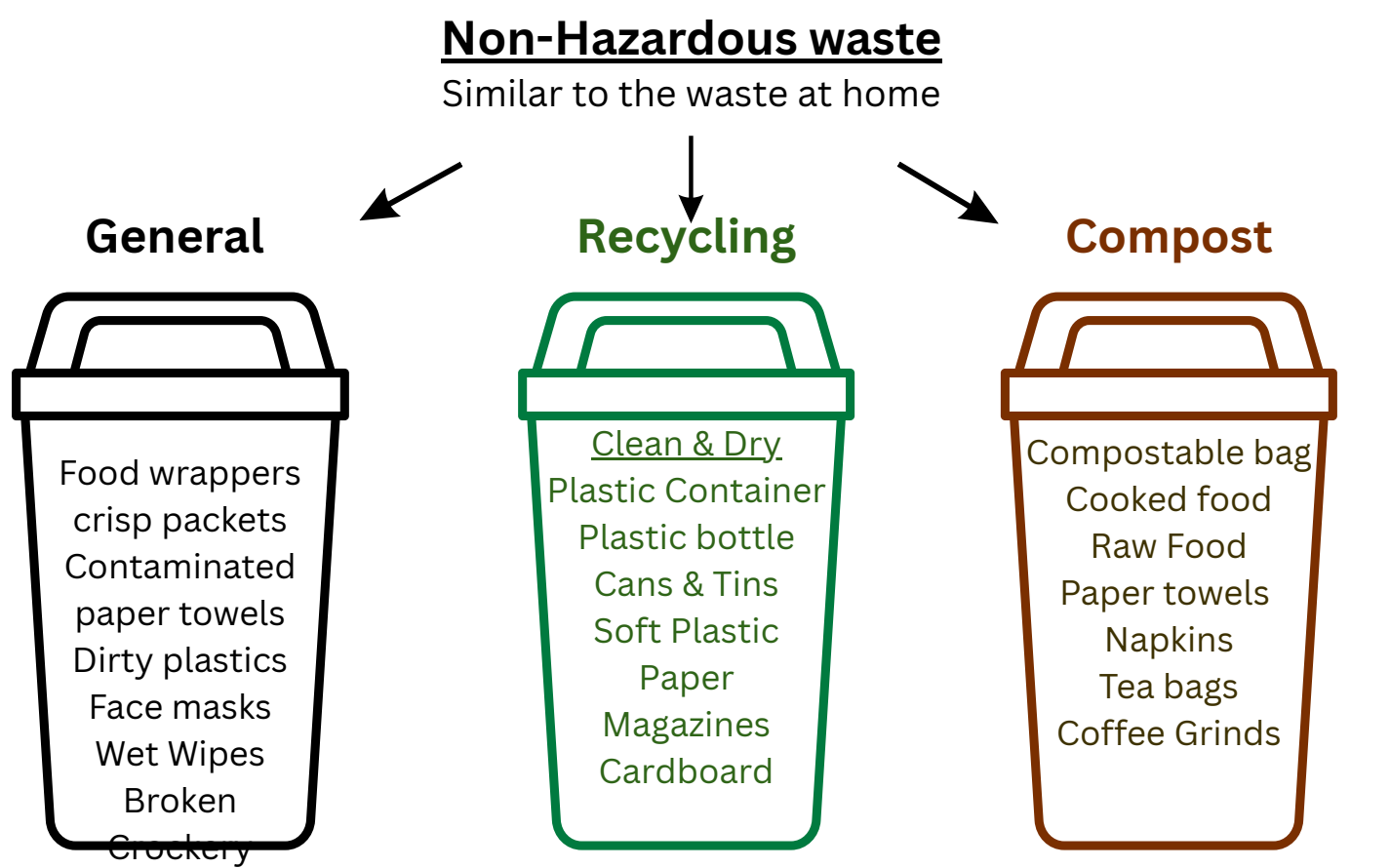
This section provides an overview of common laboratory waste types and outlines practical strategies for minimizing waste generation and improving waste segregation.

## Focus on consumables

Consumables are **single-use** items commonly used in laboratories that are **discarded** after **one use** due to contamination, sterility, or convenience requirements. Examples: Pipette tips, swabs, wipes, slides, test tubes, gloves, aluminum foil, paper filters.



## What types of waste do labs produce?



## Hazardous waste

Waste that poses a significant risk to health or the environment.



### Clinical waste

Clinical waste refers to waste generated from healthcare, laboratory, or related activities that may pose a risk of infection or harm to health and the environment. This includes items such as used gloves, swabs, sharps, human or animal tissue, and any materials contaminated with blood or bodily fluids. In Ireland, clinical waste must be segregated at the point of origin, placed in appropriate color-coded containers (e.g., yellow bags or sharps bins), and clearly labeled in line with EPA and HSE guidelines.

#### Sustainability tip:

- Items like clean gloves, packaging, or wrappers don't belong in clinical waste unless contaminated.

Find out more my about what goes into each bin by clicking this [link](#).

### Chemical waste



Chemical waste is any waste material that contains or has been contaminated by hazardous chemicals, and it is commonly generated in laboratories, industrial processes, and maintenance activities. This includes solvents, acids, bases, reagents, cleaning agents, and contaminated containers or equipment. It must be segregated by compatibility, stored in clearly labeled, leak-proof containers.

#### Sustainability tip:

- Substitute hazardous chemicals with less toxic alternatives where research protocols allow.
- Use **LabCup** to Implement a chemical inventory system to track reagents, reducing duplicate purchases and expired chemicals.
- Share reagents with other labs

Find out how to dispose of your chemical waste [here](#).

## Key waste Saving Strategies/actions The 4 Rs of Sustainability

### Reduce

- Opt for smaller storage containers and pipette tips when possible.
- Purchase in bulk to minimize packaging waste. If storage space is available.
- Use inventory management tools to share resources between labs.
- Buy refill pipette tips instead of new boxes.
- Apply Green Chemistry principles to minimize hazardous waste. (See the Green Chemistry module)

### Reuse

- Switch to glassware instead of single-use plastics where feasible.
- Reuse items like weighing boats when contamination is not a concern.
- Implement refillable systems for pipette filter tips.

### Recycle

- Participate in take-back programmes offered by suppliers for items like Styrofoam boxes and pipette tip boxes, provided they are not contaminated.
- Ensure all recyclable lab plastics are clean, dry, and loose and not contaminated.
- Participate in electronic waste recycling programs.

### Rethink

- Exchange ideas with other research groups.
- Invest in or advocate for shared facilities for equipment to avoid redundancy.
- Choose experiments that have minimal waste output without compromising research integrity.