



Waste minimisation

Laboratories are a considerable source of waste, particularly from single-use plastic products & consumables; an estimated 2% of the Earth's plastic waste originates from **life science labs** alone. UNSW laboratories produce nearly 200 tonnes of hazardous waste annually. As part of the **Environmental Sustainability Plan 2022-24**, UNSW is committed to reducing its general waste by 20%. Considering the impact of laboratories on waste, action from laboratory users is necessary to meet this goal.

Conducting waste audits

- Regularly record what gets thrown away in waste bins, recycling bins, and through chemical waste streams. Note high volume products and materials that could have been avoided, reused or recycled.
- Use audit information to determine whether further waste education and signage is necessary, as well as which products are high-value targets for waste reduction.

Experimental design and execution

- Review experimental requirements. Consider sample size, quantities, size of consumables, and storage conditions.
- Use communal stock where possible.
- Prepare bulk media and solutions.
- Consider if gloves are needed. If so, which glove type and thickness are appropriate. Can they be reused safely?
- Create buffers, reagents and kits in-house.
- Stay focused on the task at hand to reduce mistakes and wasted consumables.

Packaging

- Purchase products with bio-degradable or recyclable, low-plastic packaging. Where this is not possible, consider asking suppliers to reduce their plastic or polystyrene packaging.
- Choose products that can be shipped at ambient temperatures.
- Consolidate purchases into bulk orders.
- Reuse packaging materials such as boxes, coolers, dry ice and gel packs for shipping.
- Very little packaging should become contaminated or require incineration. Unpacking materials before entering the lab allows most packaging to be recycled.
- Look for take back programs and recycling schemes offered by suppliers.

Reducing single-use plastic

Reuse these plastic products where safe and appropriate.

- Pipettes and pipette tips when aliquoting.
- Weigh boats where appropriate.
- Flasks or multi-well plates where feasible based on experimental considerations (e.g. growing up common cell lines)
- Gloves in some circumstances - decontamination with ethanol is good practice.
- Tubes and cuvettes with a rinse in between.
- Tip boxes - prioritise purchasing reloadable/ repackable tip boxes. Use empty tip boxes for storage.
- Falcon tubes after being chemically decontaminated and autoclaved.

Substitute these products with reusable alternatives.

- Pipettes - use glass alternatives.
- Filter bottles - use glass alternatives.
- Petri dishes - use glass alternatives or assess if smaller petri dishes are possible.
- Inoculation loops - use metal alternatives.
- Vials - use glass alternatives.
- Test tubes - use glass alternatives.
- Weigh boats - use watch glass.
- Reagent reservoirs - use reusable plastic reservoir alternatives.

Consider applying for a **LEAF lab grant** to fund the purchase of reusable alternative products.

See further guidance on recycling and procurement in the **LEAF Library**.

See the **MyGreenLab guide** on waste reduction.