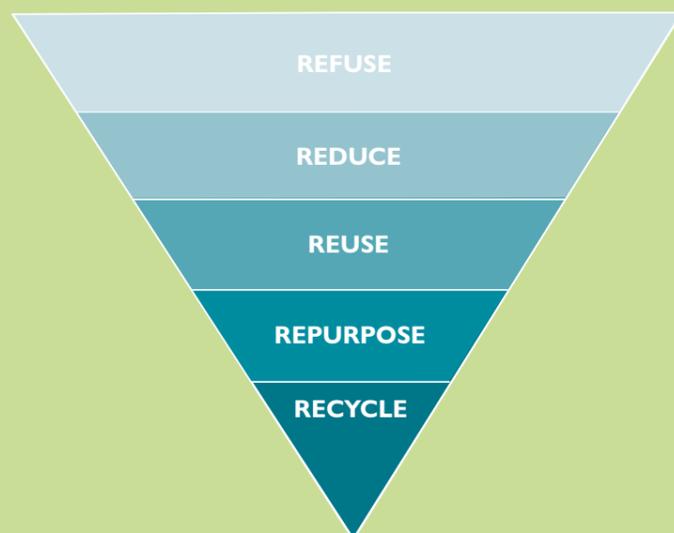




# Reducing Lab Plastic Waste



Laboratories rely heavily on single-use plastics for everyday processes. Here are some tips on how to reduce the amount of plastic waste generated in your lab by applying the five-tier waste hierarchy:



## 1 REFUSE Purchase responsibly

- Refuse unsustainable brands/products (ask suppliers for life cycle analysis data)
- Refuse wasteful ordering (only buy what you need) and share resources
- Consolidate orders to reduce packaging and deliveries
- Choose products with reduced plastic content and packaging
- Request improved packaging design and take-back schemes from suppliers

## 2 REDUCE Plan experiments efficiently to minimise plastic usage

- Reduce consumable use by optimising your experimental design
- Use the smallest size plastic vessels feasible
- Use the appropriate gloves for your task; a thinner glove may be just as safe (and will be more comfortable!)



- Use refill solutions wherever possible. Refill your pipette tip boxes with stacked tips or buy bulk refill bags (you can 3D print a re-racking device for bulk tips (search for “3D printable pipette tip Elster”))
- Replace single-use plastics with reusable alternatives that can be autoclaved, chemically decontaminated, and washed between uses

### Did you know?

Microplastics are so prevalent in the marine environment that they have become a new marine microbial habitat called the **plastisphere!**\*



## 3&4

### REUSE & REPURPOSE

Reuse/repurpose plastic labware. If decontamination is needed, check which process is suitable for each item (chemical decontamination or autoclaving)

- Reuse single-use plastics such as pipette tips (for serial dilutions)
- Reuse plastic Falcon tubes, reservoirs, and cuvettes whenever possible
- Choose alternatives over plastic wherever possible (e.g., glass serological pipettes and spreader beads, metal inoculating loops and cell scrapers, wooden toothpicks)
- Reuse or send packaging back to suppliers (e.g., NEB polystyrene boxes and ice packs)
- Repurpose empty plastic containers to hold waste and use old Winchester bottles to contain liquid waste instead of buying in single-use waste containers

## 5

### RECYCLE:

Recycling is less impactful than all the actions above it in the waste hierarchy, so should only be used as the final option when all else has been considered!

- Recycle plastic packaging (clear plastic wrapping, bubble wrap) and empty, clean, and dry lab plastics without biological or chemical residue
- Consider decontaminating un-reusable plastics so they can be recycled
- Use external recycling schemes for uncontaminated disposable gloves, facemasks, visors, and other plastic-based PPE (e.g., ReFactory PPE recycling boxes)

**FACT:** Reusing your plastic tubes has a lower CO2e footprint than production of new single-use tubes. This includes the footprint from production, washing, autoclaving, drying, and incineration!

[biorxiv.org/content/10.1101/2022.01.14.476337v1.full](https://doi.org/10.1101/2022.01.14.476337v1.full)



Any questions/feedback?

Contact [LEAF@exeter.ac.uk](mailto:LEAF@exeter.ac.uk)

SCAN

to learn more about lab sustainability at the University of Exeter



\* <https://esajournals.onlinelibrary.wiley.com/doi/abs/10.1890/150017>. Photograph: Plastic Gloves. Seaphotoart/Alamy.