

# Lab Waste Audit Toolkit

A step-by-step process to reduce plastic waste in the lab.

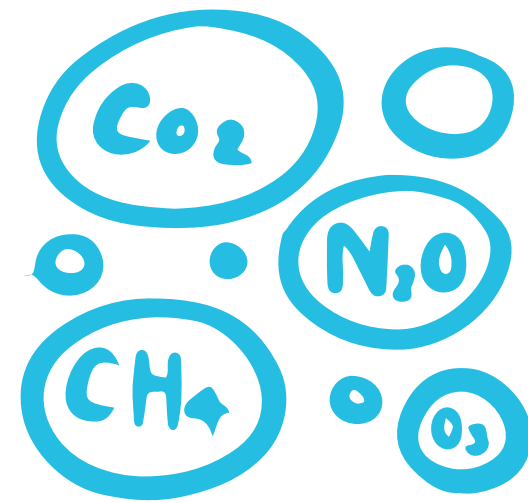


# Goals



## Reduce Plastic Waste

Labs generate 12 billion tons of plastic waste each year. This is equivalent to the weight of 67 cruise ships.



## Reduce Greenhouse Gas Emissions

Plastic production and incineration contribute to global greenhouse gas emissions.



## Learn Waste Stream Rules

Different cities have different guidelines for disposing of waste. Learn about your city's resin ID codes and requirements for recycling and compost.



## Develop Sustainable Lab Culture

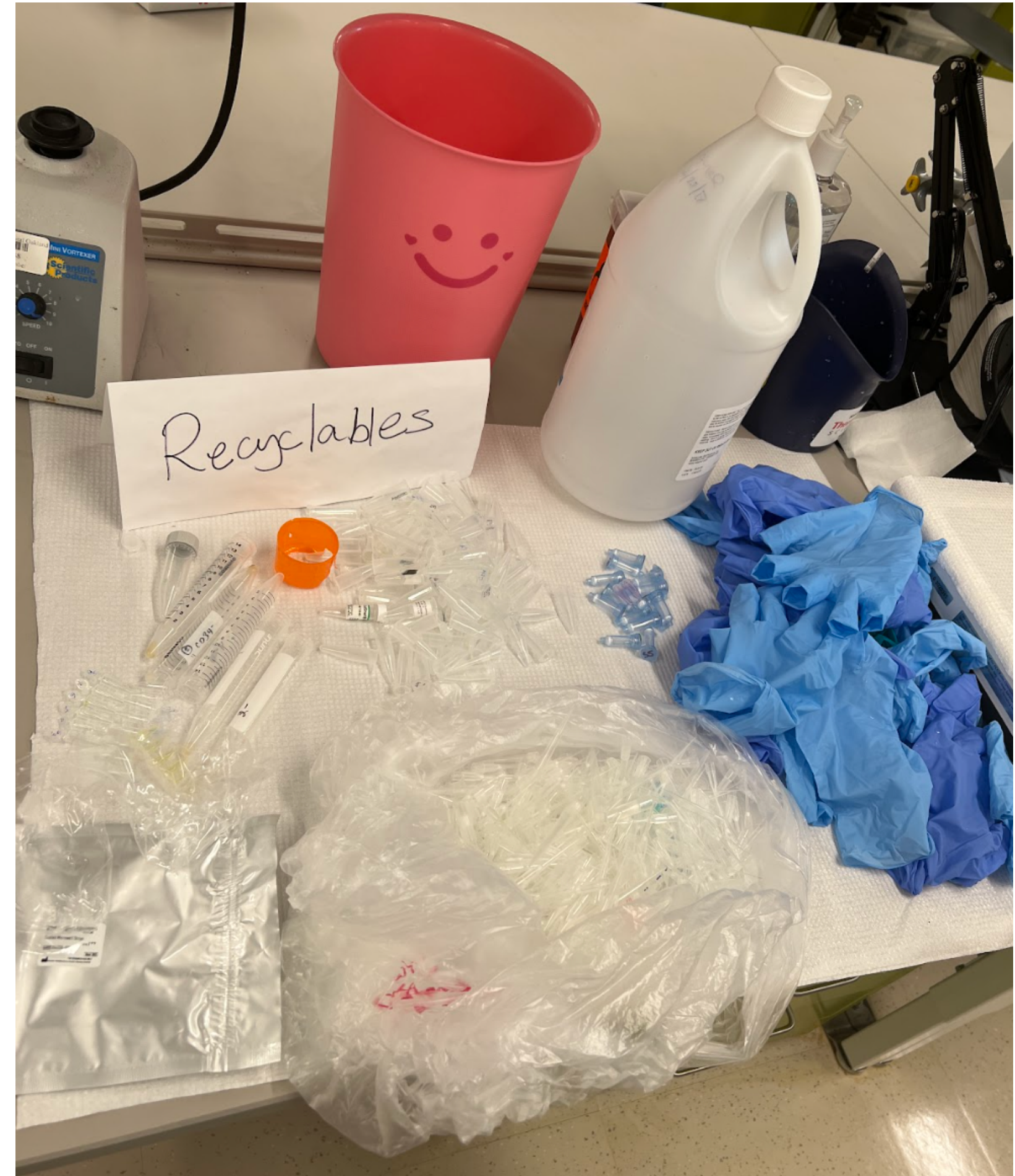
Make sustainability a priority in the lab. This can help your lab stand out grant applications.





# Questions to Ask Yourself

1. What is being thrown away that doesn't need to be?
2. Where is waste ending up within the lab?
3. Is this recyclable, compostable, or reusable?
4. How can I rethink this procedure to use less material?



# The Process

Simple steps for a waste audit.





# Phase 1

## Planning and Team Assembly

| Waste Stream        | Subgroup                      |
|---------------------|-------------------------------|
| Paper Recycling     |                               |
| Cardboard Recycling |                               |
| Plastic Recycling   |                               |
| Unique Recycling    | Nitrile gloves                |
|                     | Pipette tip trays / boxes     |
| Landfill            | Weigh boats                   |
|                     | Styrofoam                     |
|                     | Vials                         |
|                     | Pipette tips                  |
|                     | Plastic packaging / non-rigid |
|                     | Parafilm / wrapping           |
|                     | Misc.                         |



### Establish team leader and core members

They will keep the project on track and handle supply acquisition, data collection, and data analysis. Ideally 2-5 core members.



### Hold an initial meeting

- Discuss the following
1. Waste audit goals
  2. Waste components to target, categorized by waste stream
  3. Length of waste audit (2 weeks recommended)
  4. Date, time, and location for sorting/data analysis meetings



### Exclude hazardous waste

Do not include hazardous waste in the audit. See table (left) for example of waste streams to analyze.





# Phase 2

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## Preparation



### Make supply list

1. Scale (charged)
2. Large tarp on which to put unsorted trash
3. Large container for each waste stream (no lids)
4. Labels for each waste stream container

### Set target dates and assignments

1. Supplies preparation
2. Dates of audit
3. Data analysis and results

### Identify stakeholders

Consider who should be informed – lab members who are not part of core team, housekeeping and waste management staff (collect names and contact info)

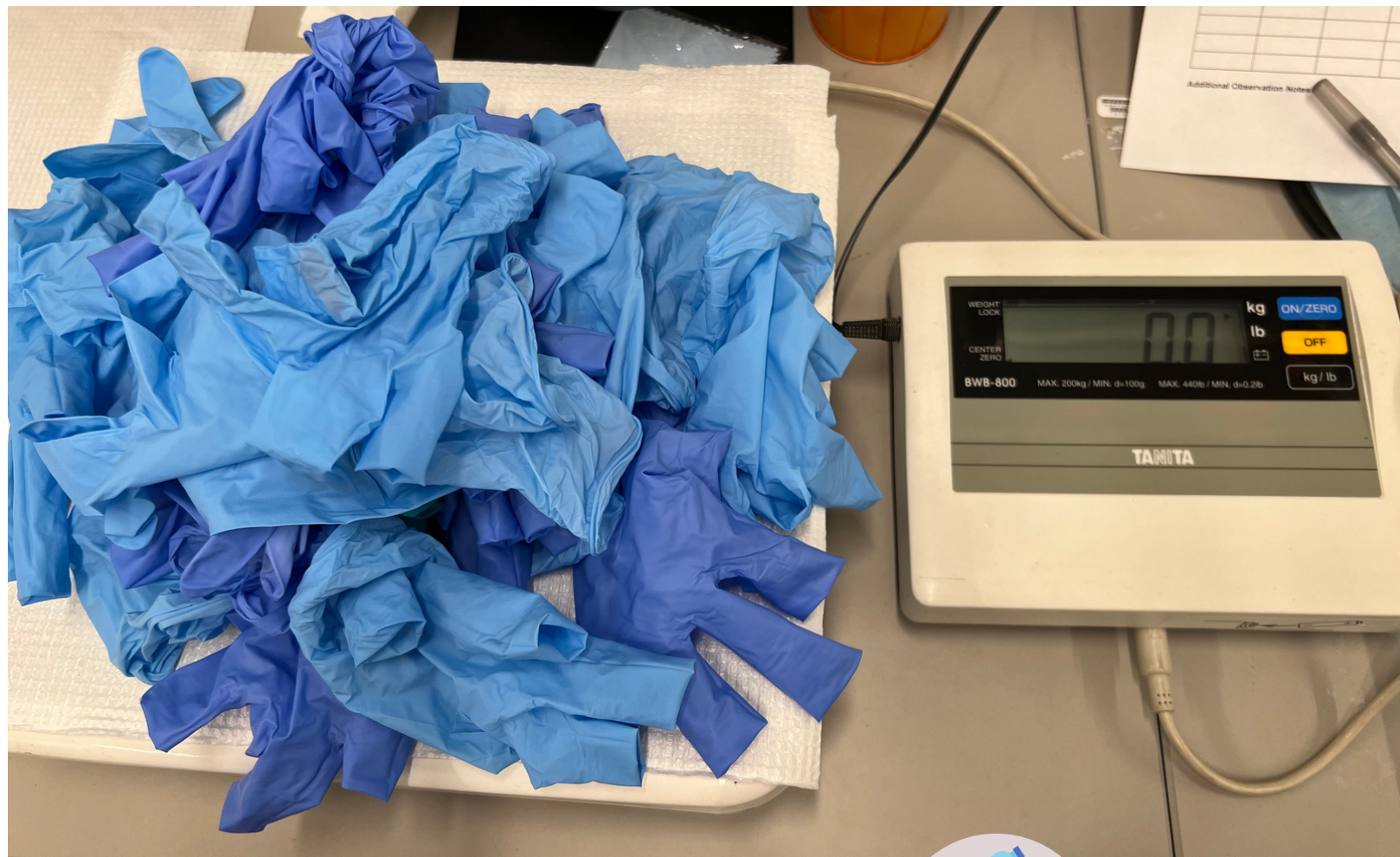




# Phase 3

## Data Collection

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### Instructions

1. Lab members should dispose of their waste in the appropriate waste container
2. At the end of the week, containers should be sorted by subgroup
3. Contents of each subgroup should be photographed and weighed
4. Weight data should be entered into a spreadsheet
5. Repeat for Week 2





# Phase 4

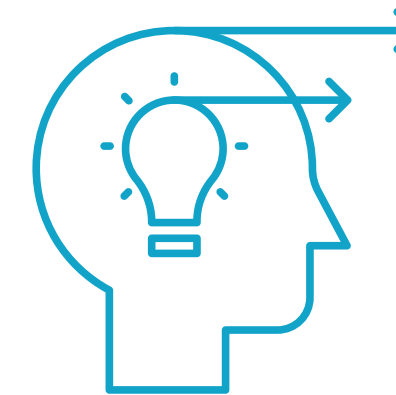
## Data Analysis

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### **Analyze the data. Answer these questions:**

1. Which waste stream(s) and subgroup(s) produce the most waste?
2. How is the waste being disposed of?
3. Are there substitutes or procedural changes that could mitigate the amount of waste going to the landfill?



### **Select 1-3 interventions**

Consider the feasibility and impact of implementing these interventions.

### **Meet with stakeholders**

Present progress, findings, and next steps. Do all stakeholders agree with the plan forward?





# Phase 5

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## Implement Changes

### Questions to consider as you prepare:

1. What materials are needed for the interventions? Where is the funding for new materials coming from?
2. Who will be involved in implementing these changes?
3. What is the timeline for implementing the proposed changes? All at once? Stagger the rollout?
4. What data needs to be collected to evaluate the interventions? Who will collect this data?

### Tips going forward:

1. Create a lab waste manual
2. Include waste sorting brief during new lab member orientation
3. Use plastic alternatives as much as possible – metal, glass, wood!

next slide for more tips! →



# Extra Resources

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## Implementing the Three R's

### Reduce

1. Change to a supplier that uses more sustainable materials
2. Contact your current supplier to suggest producing with plastic alternatives and encouraging sustainable designs
3. Discuss plastic alternatives with colleagues
4. Packaging (including boxes, plastic wrap, and directions) creates lots of waste. Consolidate supply orders to one supplier, reduce orders, order with neighboring labs, buy in bulk to reduce shipments (if there is storage space)

### Reuse

1. Reuse coolers and gel packs from packaging
2. Donate extra supplies to other labs

### Recycle

1. Some solvents are recyclable. Look into distillation systems and cleanable solvents
2. Invest in solvent recovery equipment
3. When waste cannot go into the recycling stream, consider utilizing other programs, such as Kimberly Clark, TerraCycle, and Medline for gloves, and Corning Recycles for packaging



**Congratulations on finishing your waste audit! Your sustainable actions will have a positive impact on your school, community, and planet.**





## References

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[www.mygreenlab.org/blog-beaker/how-to-reduce-waste-in-the-laboratory](http://www.mygreenlab.org/blog-beaker/how-to-reduce-waste-in-the-laboratory).
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Photo Credit: LaBeaud Lab waste audit