

## Objectives

Participants will...

- analyze sand samples from their community.
- categorize debris into plastic and not plastic.
- brainstorm how plastic enters their local environment.

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## Background

Sampling sand for microplastics can give participants a hands-on way to understand how plastic pollution moves through the environment and why it's a problem. By examining sand from our environment, participants may find small plastic fragments, fibers, and pellets.

Nurdles (tiny plastic pellets used to make nearly all plastic products) are one example of plastic pollution. Nurdles are often spilled during manufacturing or transport and can easily mix into sand. Because they're small, light, and look like food to marine animals, nurdles can travel far in water and cause harm to wildlife.

Through sampling sand for plastic, we learn that:

- **Plastic pollution isn't just big pieces:** tiny plastic particles can be widespread and are harder to clean up.
- **Sources of plastic pollution are often hidden:** not all sources are as obvious as litter; most community members don't see the industrial spills that release nurdles.
- **Plastic pollution persists:** plastics break into smaller pieces but rarely disappear.



# Materials

- 2-3 sieves of different sizes. We recommend 5 mm, 3 mm and 1 mm. Sieves can be purchased from an online marketplace such as Amazon (search “soil sifter” or “soil sieve”). If they don’t come with labels, you may want to label them with the mesh size. If sieves are not available, you can also use 2 kitchen strainers, one with larger holes (such as a colander) and one fine mesh.
- 1 closed-bottomed container (to catch the sand from the sieves)
- ~4 cups (or more) of sand per set of sieves.
  - If you collect the sand sample in the field, you will need at least 1 bucket and 1 shovel/scoop.
  - Tips for collecting your sand sample:
    - Collect sand from the surface or just below the surface.
    - Look for areas where wind or water have moved debris.
    - Avoid collecting any visible potentially hazardous materials such as sharps, hygiene items, or glass.
    - Collect the sand off the beaten path; many city or county-managed beaches and parks have trash picked up daily. Along the edges or less-managed areas may have more trash.
- Tools such as spoons or small shovels
- White plate to sort sample on - 1 per group or person sorting
- Magnifying glasses
- Tweezers
- Printouts of the Microplastics Sorting Sheet (template provided)
- Printouts of the [“Spotter’s Guide to Plastic Pollution”](#)

# Safety Considerations

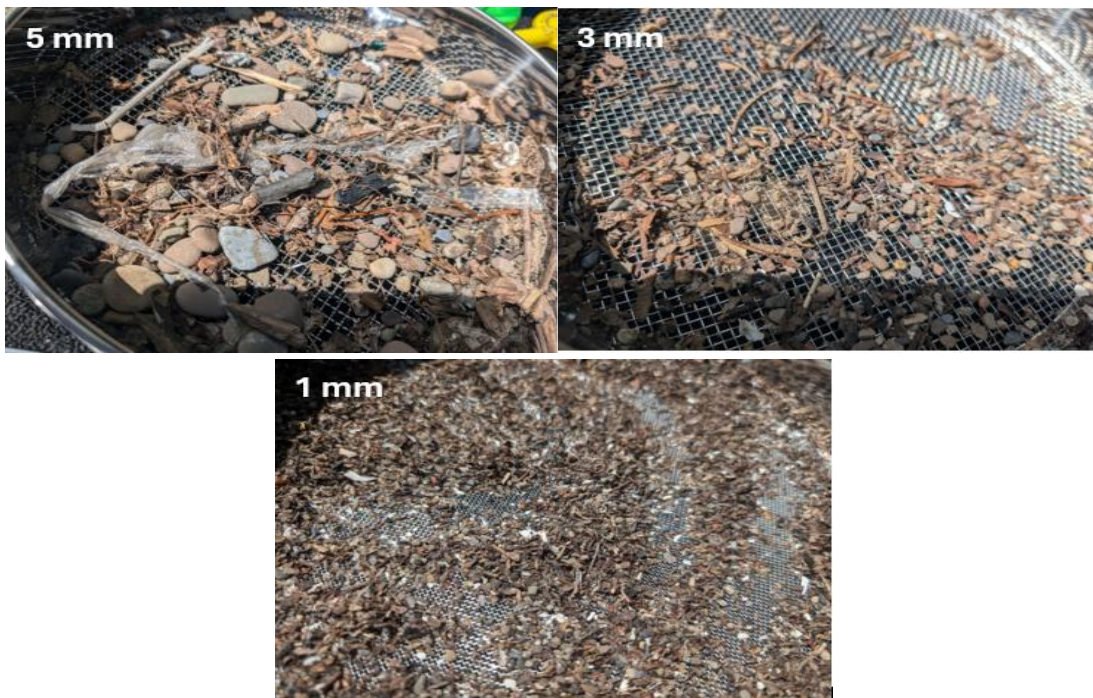
- Make sure that participants sieve the sand carefully to avoid getting sand in eyes. Safety glasses can be worn if available.
- Masks can be worn if participants are sensitive to dust.
- Use tools such as spoons or shovels to move the sand, as sand collected from the environment may contain sharp or unsanitary objects such as glass or cigarette butts.
- Be careful with small pieces if you are working with young children.
- Ensure everyone washes their hands after completing the activity.

# Adaptations for People with Disabilities

- Participants with visual impairments can feel the different pieces of debris.
- Participants with hearing impairments should be able to do this activity without any modifications other than those necessary for communicating the instructions.

## Sand Sieving Procedure

1. Stack up the sieves with the largest mesh size on top and the smallest mesh size on the bottom. Place the stacked sieves over the closed-bottomed container.
2. Pour sand through the top (largest) sieve. This 5 mm sieve represents the division between a macro and microplastic. Microplastics, less than 5 mm, will move through the sieve while macroplastics will be caught in this sieve.
3. Shake the stack of sieves to move the sand through. The sand should move easily through the larger size; once all the sand has moved through to the next size, you can take the top sieve off to make it easier to shake the smaller ones. Continue until no more sand passes through the sieves. **Note:** If you are using the kitchen strainers, you may need to do them one at a time. Shake the larger one over a closed-bottomed container and then pour the sieved sand through the smaller size.



4. Remove items caught in the sieve to the white plate. Write the size of the mesh (or type of strainer) on the top of the Microplastics Sorting Sheet.



5. Use the magnifying glasses and tweezers to sort out the plastic and other debris and place them on the Microplastics Sorting Sheet. See the “Spotter’s Guide to Plastic Pollution” for tips on separating plastic from non-plastic debris. Participants will notice that as the pieces get smaller, it will get harder to tell the difference.
6. After participants have had a chance to sort items from different sized sieves, facilitate a discussion. What did you find? What differences did you notice in the items or types of items caught in each sieve? Can you identify any of the plastic items? How might they have gotten into the sand?

## Citations & Funding

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Find more Plastic Pollution Pathways lessons at [rit.edu/plasticpollution/education](https://rit.edu/plasticpollution/education).

# Microplastics Sorting Sheet

Mesh size: \_\_\_\_\_

**Not Plastic**

**Plastic**

