

Pollution Solutions

Key Topics/Vocabulary: Pollution/Litter, [Point vs. Nonpoint Source], Human Impact, Marine Debris, Non-biodegradable

Grade Level: 3rd-6th

[Click here for Series #1 Description](#)



Lesson Bridge

Connect this lesson (3) to 'Living in our Watershed' (2) by discussing how litter might travel throughout a watershed. Ask students how water might be able to move pollution into the ocean where it then becomes marine debris. Close the loop by connecting back to Lesson #1 (Is Soil Alive?) by discussing how certain microbes are unable to decompose certain types of waste.

Lesson Overview:

How is litter created? What impact does it have on the environment, both humans and non humans? In this lesson students pose questions about the nature of the litter found around their school, make predictions, do a campus cleanup to cultivate environmental stewardship, and then brainstorm solutions to prevent litter.

Suggested Activities and Learning Objectives by Grade Level

- 3:
 - 3-LS4-4 How can we prevent litter?
- 5:
 - 5-ESS3-1 Track the amount and kinds of litter collected and use it to inform a decision about how to prevent litter.
- MS:
 - MS-ESS-4 How does increased human consumption of natural resources impact the Earth's systems?

Essential Question(s) that Connect CCCs and SEPs

- How does what I observe and note on campus about pollution, habits, and structures for humans change at different scales? Can I think of examples of what I am seeing as bigger or smaller? ([Scale](#); [Asking Questions & Defining Problems](#))
- What is already known about this cause and effect? How can I best communicate about this cause and effect relationship? (To my peers, campus, through a PSA, class presentation, etc) ([Cause & Effect](#); [Obtaining, Evaluating, and Communicating Information](#))

Vocabulary:

Pollution/Litter [[Point vs. Nonpoint Source](#)]-Trash or something with a harmful effect that enters an environment

Human Impact- Real world effects that human action has on the environment

Marine Debris- Trash, litter, or pollution that ends up in the ocean

Non-biodegradable- Material or objects that are not capable of being broken down or decomposed

Materials:

- Garden Journals [3rd/4th](#), [5th/6th](#) (Optional)
- One 10-gallon bucket
- One Trash bag or a second 10-gallon bucket
- Litter Grabbers if you have them
- Hand Sanitizer
- Compostable or reusable gloves
- Campus map (Optional: If needed, ask for a copy at the front office)

Prep:

- This lesson is to be done primarily outside. Figure out what route you will be taking beforehand and identify areas with a lot of litter. Make sure to include these on your tour.
- If it rains, have students look at campus maps and talk about possible areas of pollution from street/campus/community activities.
- [Print out a Campus Cleanup Data Collection Sheet](#)
- Print out any additional worksheets (found at the bottom of this lesson) that you would like students to work on.
- Fill one of your buckets full of water
- Have a good amount of natural and human-made objects ready

Activity Procedure:

Engage:

Pass around your natural and human-made objects, one to every two students. Have students pair up and discuss whether the object would be considered pollution. Why or why not? Would your item float? Could it decompose into soil? Could the wind carry it?

Explore:

Call on a few students to test their hypothesis by setting their objects in a bucket of water to see if they float. You can also test if the wind would blow their item (if it's not windy, you can use a piece of cardboard to make a draft).

Explain:

When the water, air, or land is contaminated or “yucked up” by either synthetic or biological material(s), we call this pollution. Examples can include: leaf litter built in the gutters and storm drains, plastic baggies floating around, oil stains on the asphalt, etc. The most harmful type of litter is that in which is non-biodegradable (define).

There are two main types of pollution: point source and non point source. Point source is when you know exactly where pollution is coming from. For example, if you see polluted water coming through a pipe, or smoke coming from a smoke stack, you know where the pollution is coming from and how it's getting into the environment. Non-point source is the pollution that is harder to identify where it comes from. For example, smog caused by cars in a city or the chemicals that runoff the road during a rainstorm are considered nonpoint source pollution.

Show photographs or tell stories about how animals and people can be harmed by pollution in the environment. Focus on stories that are relevant to the ecosystems your school campus is located in. If it is in an oak woodland, discuss how lizards can get trapped in bottles and skunks and other critters can eat plastic. If it is on the coast, discuss how seabirds can get suffocated in plastic, and fish can be harmed by rainwater runoff and chemicals from oil on the road or fertilizers from farms. Litter that makes its way to the ocean is called ‘marine debris.’ Can you say “marine debris?” Define the remaining vocabulary words.

Action: *Trash Pick-up Tour*

1. Review your Garden Agreements
2. Explain to students that you are about to go on a campus trash pickup but in order to do so, we have to make sure that we are quiet and respectful.
3. Go to areas of the campus where there is a lot of trash.
4. Clean up litter and place it into your waste receptacle.
5. Record the type of trash items that you find (wrappers, paper, etc) on your [Campus Cleanup Data Collection Sheet](#)
6. See if you can separate recycling, compost and landfill waste.
7. Dispose of waste into the proper receptacle.
8. Dispose of gloves and wash hands with soap.
9. If time allows, choose a Pollution Solutions worksheet for the students to work on (found at the bottom of this lesson in ‘Extension Activities’) or work through your garden journals.

Reflect:

What sort of pollution did we find? Could this pollution leave the school? Where would it go? What are ways we can help reduce pollution at our school? How can we prevent marine debris?

Extension Activities:

- [Marine Debris Word Search](#)

- [Compost, Recycle, Trash Sorting Worksheet](#)
- [You Are What you Eat Marine Animal Cards](#)
- Make colorful signs encouraging recycling and “zero waste” lunches with less packaging, and the connection of land-based litter to watershed/ocean pollution.
- Create mosaics by gluing found litter in the shape of marine life or other native animals with sayings that will remind other students not to litter.
- [One Cool Earth’s Marine Debris Prevention Manual](#)
- [Spanish Lesson Plan](#)

Cited Curriculum:

- [Do the Rot Thing](#), Environmental Lunch (Page 8 has the template for documenting items found)
- [MERITO Ocean Conservation & Education](#)
 - One Cool Earth Directors were trained in the MERITO curriculum and have a partnership with this team in Southern California
- [Ocean Conservancy Coastal Cleanup Data Card](#)

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