

LESSON: WATERSHEDS & THEIR RELATIONSHIP TO LITTER

Activity 2: Plastic in My Watershed!

OVERVIEW

In this activity, participants will discover different sources of plastic pollution in a watershed and the potential microplastics that they may become.

LEARNING OBJECTIVES

After completing this activity, participants will be able to:

- Understand what a pollutant is and provide examples.
- Identify the sources of plastics and other pollutants in their local watershed.
- Describe examples of microplastics and what type of plastic pollutant they might originate from.

SETUP AND MATERIALS

This activity takes approximately 40 minutes.

- Print a copy of the [worksheet](#) (or recreate your own on scrap paper) and grab a pen or pencil.
- Print a copy of the [Watershed Game Board](#) and cut out the individual game pieces.
 - There are 12 two-sided game pieces. Cut each image out and then tape or glue corresponding images together as shown below.



LESSON: WATERSHEDS & THEIR RELATIONSHIP TO LITTER

Activity 2: Plastic in My Watershed!

INSTRUCTIONS

- Provide participants with a copy of the [worksheet](#).

1. Introduce what pollutants are.

- Using the [Watershed Game Board](#), review the main components of a watershed with participants. Tell participants to think back to the list they created in "Activity 1 – What is a Watershed".
 - ***When sharing the image, point out components like hills, lakes, roads, parks, recreation areas, green space and wildlife. You can also identify areas with houses, retail stores (commercial areas), tourism, industry, factories and wastewater treatment plants.***
- Ask participants if they have heard of a pollutant before and ask them to share what they think it might be before sharing the actual definition.
 - ***Definition: Something that is introduced into the environment that causes harm, such as harmful chemicals in the lake or a plastic bag in the ocean.***
- Explain that litter can be an example of a pollutant, and that the types of litter we find and where we find them, can give us clues about where in the watershed they came from. Remind participants that while not always the case, most examples of litter have plastic in them.
- Ask participants to think of some examples of pollutants in their local watershed and to write them down on page 1 the worksheet.
- Explain we're going to look at an example of a pretend watershed and play a game to match different plastic pollutant examples to where they might come from. These areas are known as their **sources**.
- Explain we'll also learn about different types of microplastics these plastics might become if they remain in the watershed long enough.
 - As previously learned in "The Plastic Cycle - Activity 1: The Diversity of Plastic", remind participants that microplastics are less than 5 mm in size (as large as your pinky nail or as small as the width of a strand of hair). They are either made that small on purpose or found in the environment after larger pieces of plastic break up into smaller pieces of plastic. The microplastic examples shared in this activity are the kind found after larger pieces of plastic break up into smaller pieces of plastic.
- Referring back to the Watershed Game board, discuss the different potential sources of pollutants in a watershed.
 - For our game we have identified seven general sources (as labeled on the Watershed Game board).
 1. **Industry** - Factories and similar buildings that create and process materials.
 2. **Residential** - Areas of the community where people live.
 3. **Road** - Connections across communities for vehicles to travel.
 4. **Landfill** - Large area where trash is sent to spend *many many many many* years when it can't be recycled or processed.
 5. **Commercial** - Areas with retail stores and local businesses where people can purchase and sell products.
 6. **Lake** - Body of water in a community, connected to a river or nearby stream.
 7. **Wastewater Treatment Plant** - A facility that cleans sewage and water from a community before the water is returned to the environment.
- Ask participants to think of some activities that might happen at each source and to list these on the table on page 2 of the worksheet.

2. Now, it's now time to play the Watershed Game.

- Refer to the 'Answer Key' when finished playing.

LESSON: WATERSHEDS & THEIR RELATIONSHIP TO LITTER



Activity 2: Plastic in My Watershed!

HOW TO PLAY: THE WATERSHED GAME

- **Object of the game:** Match the pollutant to its source within a watershed while learning about microplastic origins.
- If there is more than one participant, they can choose to work together as a team or play individually and then compare their answers.
- Each game piece represents a plastic pollutant example. There are multiple answers (sources) possible for each game piece. Thus, some areas on the watershed game board may end up more than one game piece. Different participants will likely have different answers - this is okay!
- Finally, depending on how participants decide to answer, it's also possible some areas won't have game pieces at all.
- **Step 1:** Distribute the game board and a full set of game pieces to each player. Explain that each game piece shows a common plastic found in a watershed that can become a pollutant on one side, along with an example of a type of microplastic pollutant on the other side that they may eventually become if they remain in the watershed long enough.
- **Step 2:** Review the different areas on the watershed game board that represent the potential sources of pollutants. There are seven shown in this watershed.
- **Step 3:** Have participants now match each game piece (pollutant) to the source depicted in the watershed. A source is an area within a watershed that pollutants might originate from (e.g., a plastic straw might originate from a residential area or even a commercial area). Remember that some game pieces have multiple correct answers, so different participants can have different answers and both could be correct.
- **Step 4:** Discuss answers and why they placed each game piece where they did. If more than one participant played, compare answers and discuss their choices. Remember, it's ok to have different answers! Watersheds are all connected, and many pollutants have multiple sources.

ANSWER KEY:

Game Piece Images		Sources of pollution in watershed
Plastic example	Microplastic	
Plastic pellets	Pellet	Industry
Face wash	Microbead	Residential, Wastewater Treatment Plan
Clothing	Fiber	Residential, Wastewater Treatment Plan
Tire	Tire dust	Residential, Commercial, Road
Water bottle	Fragment	Residential, Commercial, Road, Landfill
Plastic bag	Film	Residential, Commercial, Road, Landfill
Cigarette butt	Fiber	Residential, Commercial, Road, Landfill
Foam cup	Foam	Residential, Commercial, Road, Landfill
Toy Lego	Fragment	Residential, Commercial, Landfill
Food wrapper	Film	Residential, Commercial, Road, Landfill
Fishing Line	Fiber	Lake
Fishing buoy	Foam	Lake

LESSON: WATERSHEDS & THEIR RELATIONSHIP TO LITTER



Activity 2: Plastic in My Watershed!

FINAL REFLECTION

Now that you have completed all parts of the activity, it's time to reflect back on what participants have learned.

- Have participants return to the last page of their [worksheet](#) to answer the questions below.
 - What are some other litter items you may find in your own watershed and where might they have come from?
 - Can you think of any other potential sources of pollutants in a watershed that weren't shown? (e.g., agricultural lands).

Coming up next: We'll learn more about what happens to plastic items when they are in water and how they may travel through a watershed in [Activity 3: Float, Sink or Suspend?](#)