

TURNING THE TIDE ON TRASH

A LEARNING GUIDE ON MARINE DEBRIS



LESSON TWO

Trash Traits

Grade Level:

Grades 1 – 6

Subjects:

Language Arts, Science

Overview:

Students perform experiments to examine whether or not trash can float, blow around, or wash away. The effects of these characteristics on marine debris in the environment are then discussed.

Objectives:

Learn about certain characteristics of marine debris and how these characteristics affect where marine debris is found in the environment.

Vocabulary:

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Materials:

- Enough copies of the “Trash Traits Results” handout for each student in the class
- Several pieces of plastic, glass, rubber, metal, paper, wood, and food trash items (such as banana peels, apple cores, etc.)
- A two- or three-gallon bucket filled with water
- A 15-inch round table fan (or similar)
- A large, shallow container (such as a large dishpan)
- A watering can

Learning Skills:

Analyzing, Classifying, Collecting Data, Comparing and Contrasting, Experimenting, Hypothesizing and Observing

Duration:

40 minutes

SAFETY REGULATIONS

All trash objects should be cleaned and checked by the teacher before being handled by students. Avoid any sharp objects or materials containing harmful chemicals.

Activity

1. Pass out the “Trash Traits Results” handouts (see page 22). With the students, put the different types of trash into separate piles based on the material used to manufacture them (plastic, glass, rubber, metal, paper, wood, and food). Have the students name the pieces of trash. Write the names on the board and have the students fill in the “Item” and “Type” columns of their handouts.
2. Set up the fan at one end of a table. Tell your students that the fan represents wind. Place each trash item in front of the fan, one at a time, to see if it is blown around. Ask the students the question: Which items are easily blown around? (Make a list on the chalkboard and have the students fill in the “Can It Be Blown Around on Land?” column on their handouts.)
 - Have the students observe tendencies: Is there a tendency for all of the articles of the same type (plastic, paper, metal, etc.) to be blown around in a similar way?
3. Fill the bucket with water. Place each trash item in the water and ask the students the following questions:
 - Which items float? Which do not?

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(Make a list on the chalkboard and have the students fill in the “Does It Float?” column on their handouts.)

- What will happen to buoyant items when they get into the ocean? What could some of the problems be with buoyant marine debris?
- What will happen to items that don't float when they get into the ocean? What could some of the problems be with marine debris that sinks? Is there a tendency for all of the articles of the same type (plastic, paper, metal, etc.) to float or sink?

4. Fill the large, shallow container with water and place it in front of the fan. Put each article of trash in the container one at a time and turn on the fan. Ask the students:

- Which items are easily blown around in the water? (Make a list on the chalkboard and have the students fill in the “Can It Be Blown Around in the Water?” column on their handouts.)
- Is there a tendency for all of the articles of the same type (plastic, paper, metal, etc.) to be blown around in the same way?

5. Fill the sprinkling can with water. Take the sprinkling can and the trash pieces outdoors, and find a slightly sloped, smooth area (a paved surface on a slight hill would work well). Place the trash pieces on the sloped area, and sprinkle water on them one at a time. [Note: This part of the experiment also can be conducted in the classroom by elevating one end of a board or a piece of vinyl (e.g., a piece of a residential rain gutter) and placing the lower end in a sink. Place the trash pieces on the elevated end of the board, and sprinkle water down the board.]

Ask the students:

- Which items are easily moved by the

sprinkled water? (When you get back inside make a list on the chalkboard and have the students fill in the “Can Sprinkled Water Move It?” column on their handouts.)

- What element in nature acts like the sprinkled water?
- Is there a tendency for all of the articles of the same type (plastic, paper, metal, etc.) to be affected by the sprinkled water in the same way?

6. Discuss how the characteristics examined (whether an item floats, is blown around, or is carried by sprinkled water) affect whether an item is likely to become marine debris. Also discuss how the natural environmental forces of running water, wind, and rain can cause trash to become marine debris.

EXTENSIONS

Have the students draw pictures that illustrate how a piece of trash (paper bag, coffee cup, soda can, etc.) on a street can be moved by rain into a storm drain, into a nearby stream, and then into the ocean. Or the picture can show a beach that is clean and free of trash, contrasted with a picture of a beach that has marine debris.

Students can write a short story about the journey a piece of litter takes as it is blown from land into the ocean.

DIVE DEEPER:

Other Resources on Marine Debris

- NOAA's Marine Debris 101:
www.marinedebris.noaa.gov
- EPA's Marine Debris site:
<http://water.epa.gov/type/oceb/marinedebris/index.cfm>

HANDOUT

Trash Traits Results

Item	Material (plastic, paper, metal, etc.)	Does it float?	Can it be blown around on land?	Can it be blown around in the water?	Can it be moved by sprinkled water?