



SHOWER CURTAIN WATERSHED

This lesson plan developed by:



Overview:

Did you know that no matter where you live, you are in a watershed? A watershed is an area of land that drains into streams, rivers, lakes, estuaries, and even eventually into the ocean. By making a model of a watershed with a shower curtain, kids can learn how pollutants can make their way into our ocean.

Materials:

- White board or poster and markers
- Map of United States watersheds
- Pictures of items in a watershed cut out (laminated if possible)
- Plastic shower curtain
- Tape
- Scissors
- 3 chairs
- Spray bottles with water
- Large rectangle container
- 2-3 sponges
- 1 cup of sand
- 1 cup of diluted red food coloring and a dropper

Duration:

1- 2 hours

Physical Activity:

Moderate

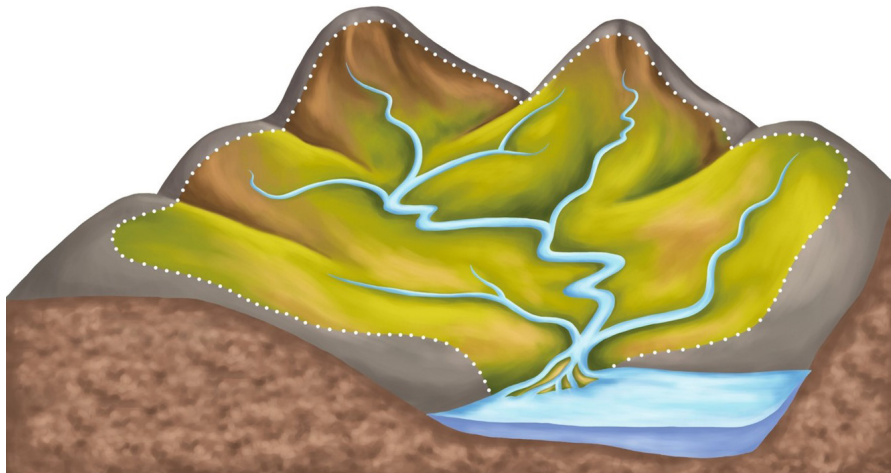
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Background:

About 71 percent of the Earth's surface is covered by water. The oceans hold about 96.5% of all the Earth's water, while the rest of the water exists in the air as water vapor, in rivers and lakes, in icecaps and glaciers, and in the ground as soil moisture and in aquifers. Water never sits still. Water is continuously moving within the Earth and atmosphere.

What is a watershed?

A watershed is an area of land that drains into rivers, streams, lakes or estuaries, and eventually into the ocean. No matter where people live, they are in a watershed. Water always flows down-hill. Therefore, the outer boundaries of a watershed are determined by the tallest landmasses, such as mountains, in the area. The watershed graphic highlights these boundaries with a white dotted line. Precipitation and groundwater drain to lower-lying areas and then eventually into a common waterway.



What is runoff?

Runoff is the water in a watershed that flows across the surface of the ground and picks up materials including soil, nutrients and chemicals. Water from hundreds of creeks and streams flow from high ground to rivers, often picking up pollutants, that will eventually reach a larger water-body, such as a reservoir, bay or ocean. Many different types of pollutants can enter a waterway through runoff.

Examples of runoff pollution:

- Fertilizers and herbicides
- Fuel and oil from cars and boats
- Chemicals from industrial plants
- Salt from roads
- Bacteria from livestock
- Soap from washing a car or boat

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Wetlands and marshes, the transition zone between dry land and a waterway, can trap sediments and pollutants that are washed off the land. They are important to the health of our oceans because they filter pollutants, trap sediment, and remove excess nutrients, acting as a buffer between land and the ocean. However, there are many things we can do to prevent pollutants from reaching wetlands and marshes in the first place.

What can we do about pollutants entering our waterways?

People can easily reduce runoff pollution by being aware of their actions and shifting everyday behaviors. Here are some examples of what we can do to make a difference:

- Dispose of oil, antifreeze and paints in proper receptacles
- Use a carwash where there is special wastewater drainage
- Use fertilizers and pesticides sparingly
- Plant native plants at home
- Pick up litter or join a beach cleanup to prevent waste from entering the water

Activity:

Part 1: Introduction to Watersheds

Ask students the following questions to start a discussion about watersheds:

1. What is a watershed? A watershed is the whole region surrounding and “shedding” (or draining) water into a common body of water. That body of water may be a stream, river, lake, estuary or ocean.
2. Do you live in a watershed? Yes, everyone does.
3. Is there any place that is NOT in a watershed? No, all land is a watershed because rain falling on land either soaks in or runs off.
4. Ask students to brainstorm a list of features or things found in a watershed. Compile list on a white board or poster. Examples include:
 - Mountains
 - Wetlands
 - Rivers
 - Marshes
 - Lakes
 - Plants
 - Streams
 - Animals

Part 2: View a Watershed Map

The size of a watershed is defined on several scales based on the geography that is most relevant to its specific area. A watershed can be small, such as area surrounding an inland lake. Conversely, some watersheds encompass thousands of square miles and may contain streams, rivers, lakes and groundwater. The largest watershed in the United States is the Mississippi River watershed, which drains 1.15 million square miles of land. The Mississippi River watershed includes the Missouri, Upper Mississippi, Ohio, Arkansas White-Red and Lower Mississippi watersheds that are

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shown in the attached watershed map (defined on a smaller scale).

Using a map the United States watersheds, ask students the following questions:

- Which watershed are you located in?
- What does our watershed look like?
- What features are found in our watershed?
- What physical features (names of mountains, ridges, etc.) form the edges of the watershed?
- When it rains, where does the water flow in the watershed?

Part 3: Build a Watershed Model

Show students the shower curtain, chairs, large container, tape, and spray bottles. Ask how they could make a watershed with those materials. This activity is done best outdoors. Have them work together to create it, however you may need to help facilitate the process.

The students can place the shower curtain over the chairs to form hills and valleys, with the large container placed on the ground where the water will end up. Tape may be helpful in keeping the shower curtain in place.

Ask the students to predict what will happen when it rains on their watershed model. Below are some guiding questions:

- Where will the water go?
- Will the water form pools?
- Where might the water travel faster/slower?
- How do they know?

Have students spray water at the top of the mountains to simulate rain. Have the rain continue until the students can see where streams, rivers and lakes form. Ask students the following questions:

- Where are rivers and lakes forming?
- Where might the ocean be?
- Where is the water going?
- Where does the water eventually end up?
- Have students think about the function of soil in a watershed.
- Does the shower curtain accurately represent soil? No, because plastic doesn't absorb or filter water like soil does.
- What happens when water comes in contact with soil? Some of the water remains close to the surface of the soil and is used by plants while some soaks deeper into the ground and becomes groundwater.

Part 4: Mimic Pollution in a Watershed:

Using the shower curtain watershed model, have a discussion about humans' impact on the envi-

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ronment. Start by asking the following questions and have students tape the pictures of the items to the model.

What living things may be found in a watershed?

- Trees
- Farm animals
- People
- Plants
- Wild animals

What manmade things may be found in a watershed?

- Houses
- Boats
- Factories
- Cars
- Dams
- Farms
- Trucks

Now the watershed model should be all set to start adding pollution. As students are answering the questions below, they (or the teacher) can add “pollution” to the model. For example, you can sprinkle sand to represent fertilizer, salt, plastics, etc. For pollution that is a liquid form (oil, chemicals, soap), you can add drops of diluted food coloring.

What are some examples of pollution that would impact our watershed? Use the previous question for some ideas.

- Fertilizers and herbicides
- Oil from cars or boats
- Chemicals from industrial plants
- Salt from roads
- Bacteria from livestock
- Soap from washing a car or boat
- Plastic waste

Have the students spray water at the top of the mountains/hills to simulate rain. Have the rain continue until the students can see where water carries the pollution. Ask students the following questions:

- Where is the water going?
- What is happening to the pollution? Where is it ending up?
- What is this type of pollution called? Runoff

Clean up the pollution. Talk to the students about the importance of wetlands and marshes. Both are extremely important ecosystems and provide a number of functions, including trapping pollutants before they reach main waterways.

Cut up each sponge to 3 or 4 pieces. Use pieces of sponge to represent wetlands. Have students place them at the transition zones (from land to water) and have the students add pollution (sand

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and diluted food coloring) to the model again. Finally have them spray again with water to represent rain. Ask the following questions:

- What is happening to the pollution?
- Are the sponges (wetlands) helping to prevent the pollutants from entering the main waterway?
- What happens if there is more pollution/rain?

Discussion:

As a group, discuss ways to keep their watershed healthy. Ask students for their ideas. Come up with three actions students can take to help protect their watershed. Try to push them to think beyond not littering and picking up trash.

Additional Resources:

To learn more about the activity, check out our [Shower Curtain Watershed “how to” video](#).

Ocean Literacy Principles:

Ocean literacy is an understanding of the ocean’s influence on us, and our impact on the ocean. There are seven [Ocean Literacy Essential Principles](#) that all people of our blue planet should have an opportunity to learn and understand. This activity touches upon the following Essential Principles:

1. The Earth has one big ocean with many features
5. The ocean supports a great diversity of life and ecosystems

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