Lesson Plan/Activity Intermediate

Pollution in Our Watershed

Lesson Objective

By building a simple watershed with paper and markers, students will understand how pollution accumulates in our water sources, especially from pesticides used in agriculture.

Activating Prior Knowledge & Concept Building

Begin the activity by asking students to identify the different kinds of bodies of water (ocean, rivers, lakes, etc.). After they have shared their responses, ask if they know how the bodies of water relates to the earth's landscape (mountains, hills, basins, etc.).

Background knowledge: The force of a falling raindrop can loosen and pick up soil particles. As water moves over land, it carries these particles with it. This moving water is called **runoff,** which is water that moves over Earth's surface. The amount of runoff in an area depends on five main factors: amount of rain, amount of vegetation, type of soil, shape of the land, and how people use the land. As runoff travels, it forms tiny grooves in the soil called **rills.** Rills flow into one another and form larger grooves, called gullies. A **gully** is a large groove, or channel, in the soil that carries runoff after a rainstorm. Gullies join together to form streams. A **stream** is a channel along which water is continually flowing down a slope.

The Science Behind It

Aside from the background knowledge, there are three main components in order to understand how pollution accumulates in our water sources. **Pollution** is the contamination of air, water, or soil by substances that are harmful to living organisms. Pollution can occur naturally, for example through volcanic eruptions, or as the result of human activities, such as the spilling of oil or disposal of industrial waste. Water running downhill is the major agent of pollution accumulation. Water runoff creates **watersheds**, a continuous ridge of high ground forming a divide between two different drainage basins or river systems. It is the region enclosed by such a divide and draining into a river, river system, or other body of water. In addition, many pesticides also accumulate in water runoff. A **pesticide** is a chemical used to kill harmful animals or plants. Pesticides are used especially in agriculture and around areas where humans live. Some are harmful to humans, either from direct contact or as residue on food. Others are harmful to a range of organisms in the environment because of their high toxicity.

Materials:

- 1 page of card stock per team
- permanent markers of multiple colors; washable orange marker
- tape
- spray bottle
- water

Instructions for Instructor:

1. Introduce the lesson by going over the background information and the "Science Behind It." Show images and pictures for visual learners if possible.
2. Divide the students into groups of 3 or 4.
3. Distribute materials to students.
4. When students are mapping out their watersheds, ask them how many they have (Repeat definition of watershed if necessary).
5. Once the students are done creating their maps, prepare to spray each map with water.
6. Wrap-up and discuss.

Closing

Review the activities of the day with the students and assess what concepts they took away or what they missed. List the key learning points on the board. Have students reflect on the activity by sharing out and writing about it in their science journals (or activity document).

Debrief Questions: What are other sources of pollution in fresh water? (Chemicals from factories, oil leaks from cars, untreated sewage, fertilizer from farms, golf courses, and lawns, household cleaner, medicines). What can be a better alternative to pesticide use so that it does not contaminate our drinking water? What are some solutions to decrease pollution? What can be done to clean our water?

Source: http://teachers.egfi-k12.org/lesson-plan-pollution-in-our-watershed/