



HOW DO WE USE WATER?

AGE: Grades K-6

SUBJECT: Science, Social Studies

SKILLS: Analysis, application, classification, discussion, evaluation, generalization, inference, problem solving

DURATION: 30 minutes

GROUP SIZE: Any

SETTING: Indoors

KEY VOCABULARY: point source pollution, nonpoint pollution, groundwater

Description

Students will find pictures that illustrate facts about how people use water.

Learner Objective

Students will be able to determine ways in which water is affected by human actions.

Background

Water pollution is caused by everyone – by the way people live and work and use the water and the land. Water becomes polluted when it is used in homes, in factories, and in businesses. When wastewater is discharged through pipes or sewers, it is called a point source, and this form of pollution is controlled through a national permit system, prescribing the types and the amounts of pollutants that a municipality or an industry can discharge into waterways. Historically, management and control of point source water discharges have been the major emphasis of this national pollution program.

Now, however, there is increasing concern over other pollution that comes from “nonpoint sources” – pollution that is carried over land by rainwater or melting snow or which seeps through the earth and enters waterways. Examples of such pollution include:

- Rainwater running off buildings and carrying with it oil, grease, trash, salts, lead and other pollutants, which becomes an urban stormwater problem.
- Rainwater washing fertilizers and pesticides and topsoil into waterways, which produces agricultural run-off.
- Soil which is washed into streams, rivers, and lakes from erosion, which come often from construction run-off.
- Water in contact with certain minerals in mine areas, which often becomes pollution called acid mine drainage.
- Water washing sediments from where the earth has been disturbed by logging and timber operations, which is termed silviculture run-off.

Nonpoint pollution also comes from septic tanks, poor landfills, or underground waste areas where water seeps through the soil, picking up pollutants and carrying them into waterways and groundwater. Unlike point sources, these sources of water pollution generally

cannot be collected and treated. Nonpoint pollution can only be reduced by more careful management of our water and land resources.

Materials

- Bulletin board of facts
- Pictures students collect

Activity

1. Students will complete Activity Sheet
2. Students will prepare a bulletin board with the following facts. Students may cut out pictures of people using water to “frame” the facts.
 - a. Humans must take in about 5 ½ pints of water in some form every day. The average person will consume about 16,000 gallons of water in a lifetime. Our bodies are about 65 percent water:
 - blood – 80-90 percent
 - muscles – 75 percent
 - bones – 20 percent
 - b. About 200 gallons of water per person per day is used for domestic purposes:
 - 3-5 gallons to flush toilet
 - 30-40 gallons for a bath
 - 5 gallons per minute in a shower
 - 30 gallons for each load of wash in an automatic washer
 - 10 gallons to wash dishes
 - c. American industry uses enormous quantities of water, about 140 billion gallons per day:
 - 150 gallons to make one Sunday newspaper
 - 30,000 gallons to produce one ton of paper
 - 40,000 gallons to produce one ton of steel
 - d. Farms need water. Each day, on the average, rain and snow distribute more than 4 trillion gallons of precipitation across the lower 48 states:
 - 110 billion gallons per day for irrigation
 - 300 gallons to produce the grain for a loaf of bread
 - 4,000 gallons to produce a pound of beef
3. If a drought or water pollution caused a shortage of clean water for drinking and washing, which uses of water do you think should be cut first?
 - a. Direct students to put a (1) by the use which should be cut first, put a (2) by the use which should be cut second, continue until you have a number by each use on the list.
 - b. Direct students to put an “X” by possible point sources of pollution, put an “N” by possible nonpoint sources of pollution.



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agriculture run-off

construction run-off

point sources of pollution

acid mine run-off

silviculture run-off

urban storm water

nonpoint sources of pollution

Match the terms above with the statements below:

- _____ 1. Water pollution caused by certain minerals in areas where mines are located.
- _____ 2. Rainwater running off buildings and carrying with it oil, grease, trash, salts, lead and other pollutants.
- _____ 3. Water washing sediments from where the earth has been disturbed by logging and timber operations.
- _____ 4. Rainwater washing fertilizers and pesticides and topsoil from the fields into waterways.
- _____ 5. Pollution that is carried over land by rainwater or melting snow or which seeps through the earth and enters waterways in a general manner.
- _____ 6. Earth which is washed into streams, rivers and lakes as roads or buildings are being constructed.
- _____ 7. Waste water which is through sewers or point and is controlled through a national permit system.