Introduction

Surface waters (rivers, streams, lakes, ponds, and ground waters) are interconnected in some areas. They are connected in surface water bodies to ground water bodies and vice versa. Water bodies in the United States receive water from many sources, including point sources and nonpoint sources. This poster demonstrates the movement of pollutants from surface water to ground water as well as the difficulty of cleaning up the pollution.

Objectives

- Students will:
  1. Observe the movement of pollutants from the surface of the water and ground water;
  2. Experience the difficulty of cleaning up polluted water.

Materials

- Each group will need:
  1. One 240-ml clear plastic cup;
  2. One cup filled with soil of the same size as the 240-ml cup;
  3. One 240-ml paper cup filled with soil;
  4. Four 240-ml paper cups;
  5. Water color;
  6. A large handful of vegetative litter (leaves, twigs, and stems), and sand.

Procedure

1. Divide the class into groups of three students. Provide each group with one color paper, one 240-ml cup with holes punched in the bottom, two 240-ml cups filled with soil, one 240-ml cup filled 2/3 full of water, and a large handful of vegetative litter.

2. Have the students place one side of the tan pan on a thin book or table of paper to create a "lake" at the bottom of the pan. Explain to students that the mound represents a hill.

3. Explain to the students that rain enters the gravel and becomes ground water. This process is called infiltration. Ask them what the hole simulates.

4. Place the vegetative litter on top of the soil mound. Explain to the students that the lake represents the water table.

5. Instruct the students to dig a hole in the center of the gravel. Ask them what the hole simulates. The optimum point is where the water table meets the surface of the gravel.

6. The following individuals contributed to the development of this poster:


- Artwork: Frank Panzar, Frank Katarzyniak, and David Holz, color contact with the National Science Teachers Association.

DEFINITIONS

- Ground Water
  - An underground body of porous sand, gravel, or fractured rock filled with water and capable of supplying a dependable supply of water at a well or spring.

- Point Source
  - Water pollution from a single identifiable source such as a chemical plant, sewage treatment plant, or hospital.

- Nonpoint Source
  - Pollution contributed to water through surface runoff from areas such as agricultural land and forest land, construction sites, and urban streets.

- Water Quality
  - The degree of acceptability of water for a given purpose. Water quality is often described in terms of water quantity, clarity, color, taste, odor, or dissolved substances.

- River
  - A natural water body that flows in the same general direction for most of its length.

- Lake
  - A natural or artificial water body that is enclosed by land.

- Pond
  - A natural or artificial water body that is enclosed by land and is shallow enough for the wind to reach bottom.

- Biodiversity
  - The variety and variability of life within a given area or ecosystem.

- Water Use
  - The utilization of water resources for various purposes such as drinking, irrigation, and power generation.

- Wastewater Treatment
  - The process of treating sewage and industrial waste to reduce pollution and make it safe for discharge into bodies of water.

- Erosion
  - The transportation of soil and rock fragments by water, wind, or ice.

- Sediment
  - Particles derived from rock or organic materials that have been transported by water, wind, or ice.

- Vegetative Litter
  - Vegetation that falls from plants.

- Vegetation
  - Plants that grow in a particular area.

- Streambank
  - The area between a stream and its banks.

- Water Quality: Potential Sources of Pollution
  - The following individuals contributed to the development of this poster:


- Artwork: Frank Panzar, Frank Katarzyniak, and David Holz, color contact with the National Science Teachers Association.

ACKNOWLEDGMENTS

The following individuals contributed to the development of this poster:


- Artwork: Frank Panzar, Frank Katarzyniak, and David Holz, color contact with the National Science Teachers Association.

U.S. DEPARTMENT OF THE INTERIOR

As the nation’s environmental protection agency, the U.S. Department of the Interior has responsibility for most of the nation's surface and ground water resources. This responsibility includes ensuring the sustainable use and effective management of these resources, and providing for the enjoyment of the American people through recreational opportunities. The Department operates over 400 facilities and national parks, and it is responsible for the development and management of over 200 million acres of public lands. The Department is also responsible for managing the nation's water resources, including the management of the nation's water supplies, and ensuring the protection of the nation's water resources.