

POLLUTION PETE PATROL

OBJECTIVES

The student will do the following:

1. Brainstorm recreational uses of surface water.
2. Be aware that federal laws prohibit the dumping of garbage and pollutants into surface water.
3. Simulate the impact of recreational pollutants on surface water.

BACKGROUND INFORMATION

All forms of recreation on and around surface waters have the potential for polluting the water. Houseboats pollute with human sewage wastes; boats pollute with garbage, motor oil, and gasoline; boat docks with human wastes, motor oil, and gasoline; boat launching pads and parking areas with run-off oils and gas; campsites with wastewater, garbage, human wastes, and erosion; and swimming with human wastes.

Polluting our waters is against several federal and international laws. The Refuse Act of 1899 prohibits the throwing, discharging, or depositing of any refuse matter of any kind (including trash, garbage, oil, or any other liquid pollutants) into the waters of the U.S. The Federal Water Pollution Control Act prohibits the discharge of hazardous substances or oils into U.S. navigable waters. The MARPOL Annex V international law restricts overboard dumping of garbage. The U.S. law of Annex V prohibits the dumping of plastic trash and limits the overboard dumping of other garbage.

If you witness a boat discharging oil or hazardous substances into the water (or if yours does) you must notify the U.S. Coast Guard. You must give this information: (1) location, (2) source, (3) size, (4) color, (5) substance, and (6) time observed.

All recreational boats with toilet facilities must have a working marine sanitation device (MSD) on board. The Coast Guard must certify all installed MSDs.

Terms

contaminant: an impurity that causes air, soil, or water to be harmful to human health or the environment.

pollutant: an impurity (contaminant) that causes an undesirable change in the physical, chemical, or

SUBJECTS:

Science, Art, Social Studies

TIME:

2 50-minute periods

Materials:

drawing paper
crayons or colored markers
10-gallon (40 L) aquarium
pump from liquid soap bottle
plastic caps from soda bottles
plastic 6-pack rings
plastic bags
scissors
glue stick
vegetable oil
used coffee grounds
small toy boat
rubber gloves
fish hooks
fishing line
foods (such as crackers, chips, bread)
milk carton [washed out] from the cafeteria
posterboard
student sheet (included)
teacher sheets (included)

biological characteristics of the air, water, or land that may be harmful to or affect the health, survival, or activities of humans or other living organisms.

recreation: any activity, sport, or hobby that refreshes your mind and body.

ADVANCE PREPARATION

- A. Secure a 10-gallon (40 L) aquarium the day before the lesson is taught (may borrow one from a parent) and fill it half full with water.
- B. Collect the following items several days before the lesson: pump from a liquid soap bottle, plastic caps from soda bottles, plastic six-pack rings, plastic bags, vegetable oil, used coffee grounds, small toy boat, fish hooks, fishing line, foods (such as crackers, chips, bread), milk carton (washed out) from the cafeteria.
- C. Make a copy of the student sheet "Pollution Pete Patrol" for each student.
- D. Mix the used coffee grounds with water and put the mixture in the milk carton (only fill 1/3 to 1/2 full so it will float). Seal the end and make a small round hole, with a pencil, in the side of the milk carton to insert the hand soap pump into.

PROCEDURE

- I. Setting the stage
 - A. Lead the students in a brainstorming session on the recreational uses of surface water.
 1. List the student examples on the board. (Examples, swimming, fishing, boating, camping, etc.)
 2. Add to the list if needed or limit the list if needed. (NOTE: See teacher sheet "Overboard.")
 3. Conduct a survey of the class to determine how many students participate in the listed recreational activities. Graph the results.
 - B. Have the students create a picture showing as many of the listed activities as they enjoy doing. Give each a sheet of drawing paper.
 - C. Lead a discussion on how each of the listed activities can pollute surface waters. (Note: See teacher sheet "Overboard" for examples.)
 1. After the discussion the students will examine their recreation drawings to identify possible sources of pollution.
 2. Give each student a copy of the student sheet "Pollution Pete Patrol." Let them color the "Pete" symbols.
 3. The students will mark the possible pollution sources in their drawings by gluing a cut-out "Pollution Pete" symbol beside the possible pollution sources.
 4. Post the drawings around the classroom.

II. Activity

- A. Set the half-filled aquarium on a table in front of the class. Explain that the aquarium represents a lake (or other body of surface water). (NOTE: See the teacher sheet “Recreational Pollutants Demonstration.”)
 1. Ask individual students to name pollution sources they depicted in their drawings.
 - a. As each student reveals his/her pollution sources, simulate the pollution by adding representatives of the pollution to the aquarium. (NOTE: You might wear rubber gloves.)
 - b. Continue the process until each student has revealed his or her pollution sources. (NOTE: Repetitive naming of sources will only heighten the visual impact of the activity.)
 - c. Allow the students to come to the aquarium and observe and smell the water.
- B. Ask the students how many of them would like to use this lake for their recreation fun.
 1. Ask the students the following questions:
 - a. What can we do about this pollution?
 - b. Are there any laws against polluting?
 - c. What should you do if you see someone polluting the lake?
 2. Explain the Refuse Act of 1899, the Federal Water Pollution Control Act and the MARPOL Annex V international law to the students. (NOTE: Use the teacher sheet “Recreational Pollutants Demonstration” for this information.)
- C. To extend the student’s thinking beyond pollution to the cleaning up of polluted waters, let the students plan some ways to attempt to clean it up.
- D. When you are through with your lesson, remove all the solid trash from the aquarium. Throw away what you cannot recycle. The liquid may be discarded down the drain or toilet (try to decant it off the coffee grounds, leaving them in the bottom). Scrape the coffee grounds out. Compost them if possible; if not, put them in the trash. Clean the aquarium with a biodegradable cleanser.

III. Follow-Up

- A. Have the students make posters on the theme of “Stopping Recreation Pollution with Pollution Pete.” Encourage the students to come up with catchy slogans for their posters.
- B. Ask community businesses—especially sporting goods shops, boat shops, marinas, and campgrounds—to display the finished posters.

IV. Extensions

- A. Contact a local wildlife, fisheries, or forestry officer to come and talk to your class about recreational pollution.
- B. Create pledge cards to join Pollution Pete’s Patrol. Have students “join” the patrol and check the

community for any recreational pollution.





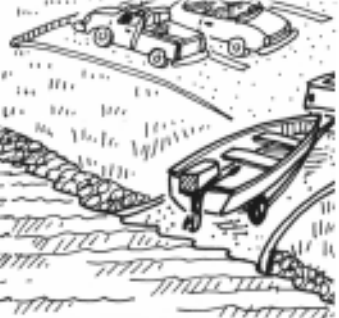


- C. Invite a newspaper representative to class to see and hear about what the Pollution Pete Patrol is doing to help stop recreational pollution. Have pictures taken of the posters for inclusion in the newspaper.
- D. Make a study of how pollution affects wildlife. Look carefully at how plastic trash (especially 6-pack rings and plastic bags) affects water-dwelling creatures. For example, birds and marine mammals get plastic rings around their beaks or necks, which causes choking and/or starving. Some animals ingest plastic, which stops up their intestines and starves them.

RESOURCES

Federal Requirements for Recreational Boats, United States Coast Guard, U.S. Department of Transportation.

Kathryn O'Hara/CMC, "Tossing This Trash Overboard Could Leave Death in Your Wake," S & S Graphics, Inc., May 1991.

OVERBOARD

Recreational Uses of Water	Recreational Pollutants
<p>Camping, Swimming, and Picnicking</p> 	<p>Litter (plastic bottles, cans, 6-pack rings, plastic bags, and pet waste)</p> 
<p>Houseboats</p> 	<p>Litter and Wastewater (human wastes)</p> 
<p>Boating, Boat Ramps, and Parking Lots</p> 	<p>Litter and Waste (fishing hooks, fishing line, oil, and gasoline)</p> 
<p>Gas Tanks and Pumps</p> 	<p>Oil and Gasoline</p> 