

Lesson 21

Storm Waters

What is the purpose of a storm drain?
Where does water in the streets go when it rains?
What is non-point source pollution?

GOAL To understand that run-off can carry identified and unidentified pollutants down the storm drain to waterways.

OBJECTIVES Students will:

- ✓ simulate polluting a waterway
- ✓ realize the effect of pollutants going down a storm drain
- ✓ realize that some pollution sources are difficult to identify
- ✓ understand run-off from rain sometimes carries pollutants down a storm drain

MATERIALS 5 gallon plastic container (clear), canisters, masking tape, permanent markers, “pollution” - leaves, oil, sand/salt mixture, plastic or styrofoam pieces, green food coloring

CORE CURRICULUM CONTENT STANDARDS

- Science 1(7), 8(2-8), 11(6), 14(5,7)
- Social Studies 9(2), 10(1,3), 12(4,5,7)

VOCABULARY non-point source pollution, pollution, storm drain, run-off

PROCEDURES

1. Ask students if they are familiar with a storm drain. (*a drain on the side of the road that carries away excess water during rainstorms*) Determine if the students know its purpose (*prevent flooding in streets*) Explain that the excess water is called run-off.
2. Ask if they know where the run-off water goes (*nearest waterway*).
3. Pose the following question: What happens if there is trash on the road or oil spots? Does that go down the drain, too?
4. Have students simulate storm drain activity. Fill up a clear and plastic container with water. This will simulate their waterway, such as Connecticut River or Farmington River.
5. Before beginning activity, introduce the term non-point source pollution, and pollution. Pollution refers to harm to a natural area by chemicals, wastes, etc. Non-point source pollution refers to a source that can not be clearly identified.
6. Begin by explaining that the waterway (*container*) is clear and fresh. Many fish and other wildlife thrive in the waterway. Swimmers have recently been banned from going into the water because of an unknown source of pollution. Lay a piece of cardboard on top of the container. Cardboard should have cut-outs simulating storm drains.
7. Explain to the students that the cut-outs are storm drains. The canisters near the water-

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- way are filled (*instructor fills prior to activity*) with “unidentified sources of pollution”. They are marked with a number on the outside (*use masking tape and permanent marker to mark numbers*)
8. Explain to students that possible sources of pollution are written on pieces of paper that may be picked from a box, jar or envelope. The papers have a number on them to correspond to the sources of pollution. Their challenge is to identify the sources.
 9. Choose a student to pick a paper and read the source. Distribute canisters filled with a source of simulated pollution (*There may be several canisters with the same pollution since the storm drains may be around the whole city or town*). As student reads the source, the student (s) pours the “pollution” from the canister into the storm drain. Two or more students may have canisters of the same “pollution” source to simulate more than one household.
 10. The pollution sources are listed as follows:
 1. The lawn at my house was mowed this weekend. I was composting leaves, but it was very windy. Lots of leaves blew out of the yard and down the storm drain. (Have students place *leaves* down simulated drain)
 2. My car was parked on the road for several days. Unfortunately, I forgot to get my oil leak fixed. The oil leaked on to the street and it rained last night. The oil went down the storm drain. (Have student(s) pour *oil* down the storm drain.).
 3. It was a snowy winter and the public works crew in my town decided to use a mixture of sand and salt to melt the snow and ice. It really melted the ice and caused the melted snow and ice to flood the storm drain. Down went the sand and salt into the drain. (Students pour *sand and salt* mixture down storm drain).
 4. We went to a park and had a picnic lunch with our friends. After eating, we played a game of football. I noticed squirrels carrying pieces of trash away. Some of it blew onto grass and parking lot. I was too busy playing. The automatic sprinklers went on to water the grass. The trash went down the drains. (Have students place *plastic pieces, styrofoam*, etc. into drain).
 5. My father fertilized the lawn. He was happy that it rained so the fertilizer would absorb into the soil. The fertilizer went down the drain (Have students pour *water with green food coloring* down the drain).
 11. Once completed, ask students why there was no swimming. Pose the questions: What were the sources of pollution? What could be done to prevent this from happening?
 12. Ask students to list ways they can clean up the waterway.

EXTENSIONS

1. Have students break up into groups. What can they do to prevent pollution in the water, air and land? Ask them to list five things they could do to keep the environment clean. Have students present options to class. Have students choose one item from the list that they can put into action.
2. Ask students if they can think of other sources of pollution that may harm our waterways. Have them also think of ways to prevent pollution.

RESOURCES

Haskin, Kathleen, *The Ways of the Watersheds, An Educators Guide to the Environmental and Cultural Dynamics of New York City's Water Supplies*, 1995, The Frost valley YMCA, Claryville, NY.

GLOSSARY

non-point source pollution - pollution caused by rainfall or snowmelt moving over and through the ground; as the runoff moves, it picks up and carries away natural and human-made pollutants, finally depositing them into lakes, rivers, wetlands, coastal waters, and even our underground sources of drinking water

pollution - a substance that makes a resource unclean, especially by environmental contamination by man-made waste

run-off - rainfall not absorbed by soil

storm drain - a storm sewer

Copy and cut the following scenerios:

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3. It was a snowy winter and the public works crew in my town decided to use a mixture of sand and salt to melt the snow and ice. It really melted the ice and caused the melted snow and ice to flood the storm drain. Down went the sand and salt into the drain. (Students pour sand and salt mixture down storm drain).

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