



4-H Grab and Go: *How Did that Get There?*

Concept:

Understand the difference between nonpoint source and point source pollution and what natural and man-made options there are for cleaning our water supply.

Age Level:

Middle School, Grades 6-8

Education Standard:

NS.5-8.6 Earth and Space Science

SET Ability:

Communicate/Demonstrate, Develop Solutions, Infer, Interpret/Analyze/Reason

Life Skill:

Problem Solving, Self-responsibility, Critical Thinking, Responsible Citizenship

Success Indicator:

Youth will be able to document solutions to prevent/decrease non-point source pollution.

4-H Curriculum:

Exploring Your Environment (www.4-H.org/curriculum/environment)

PREPARATION

Time: 20 Minutes

Space: Large open area

Materials:

- Large basket or bag to hold materials
- Fast food container
- Motor oil (empty container)
- Toilet paper roll
- Battery
- Fertilizer (empty container)
- Pesticide (empty container)
- Car washing fluids
- Household cleaning products (empty containers)
- Crumpled piece of paper
- Examples of other common pollutants

Note: Containers can be substituted with photos of product.

Background Information:

Water is everywhere; in the sky, in the ground, and in our homes. Caring for this important resource is a challenge for each of us. Conservation means using water wisely. Protecting our ground water is important because it is a source for drinking and irrigation. Unfortunately, pollution is a fact of life in the earth's surface water. There are many causes of pollution such as sewage and wastewater, industrial waste, underground storage leakages, atmospheric conditions, and global warming.

Point Source Pollution is something you can physically point to like a pipe coming out of a sewage treatment plant. With point source pollution, the single origin or source is clear.

Nonpoint Source Pollution comes from many natural and man-made sources and locations. It is caused by runoff (rainfall or snow melting) that picks up pollutants and deposits them into or water (lakes, rivers, oceans). These pollutants even seep into our underground sources of drinking water. Some of the pollutants include: fertilizers, herbicides, insecticides, oil, toxic chemicals, sediment, sewage (<http://www.epa.gov/owow/nps/qa.html>).

A **Watershed** is the area of land where all of the water that is under it or drains off of it goes into the same place. The water from high elevations drains downward and comes together to form streams and rivers as it moves into lower elevations. Watersheds come in all different shapes and sizes. They cross county, state, and national boundaries. In the continental United States, there are 2,110 watersheds; including Hawaii, Alaska, and Puerto Rico, there are 2,267 watersheds (www.epa.gov).

To locate your watershed visit:

<http://cfpub.epa.gov/surf/locate/index.cfm>

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How Did that Get There? (Continued)

YOUTH DEVELOPMENT TIP

When asking questions, recognize all possible solutions and answers. Respond with additional questions to probe for deeper learning and stimulate dialogue.

Checkpoint:

- Provide explanation of watershed, allow opportunities for discussion.

Open Ended Questions:

- Are there ways that we can prevent these from being in our water?
- What are the effects of pollution on drinkable water?
- What technologies are available to reverse the effects of pollution on drinking water?
- What actions could you take to prevent nonpoint source pollution?

Instructions:

Put all pollutants into a large basket or bag that can be easily passed among the group.

Safety tip: Be sure that the containers for all pesticide, herbicide or potentially hazardous materials are empty and washed so that the group does not come in direct contact with the materials.

1. Have the youth sit in a circle.
2. Pass around bag or basket with possible types of pollutants. Have each youth choose one (with a small group, youth can choose more than one).
3. Ask youth to describe their item and how it could have been used.
4. Tell youth to imagine that they are water anywhere in their environment (They can be a lake, a river, a rain storm, a sewer).
5. Ask youth to tell a story about how their item (pollutant) ended up with them (from the point of view of the water).
6. As each youth completes their story, instruct them to place their item on the floor in the middle of the circle.
7. After all of the youth have completed their stories and all items are in the middle of the floor, explain that the floor represents the watershed that all of our water supply feeds into.
8. Have the group brainstorm ways that we can prevent these nonpoint source pollutants from entering our waterways in the future. When they come up with a solution, they get to remove that item from the middle of the circle (ocean). Continue until all pollutants have been removed from the watershed.