

# WHAT'S IN YOUR WATER?

## THE BEACH

TEACHER'S GUIDE

This activity is designed to show different kinds of pollutants that are present in our water in Iowa, and how water can be polluted even if it doesn't look dirty. Pollutants in the demonstration include litter, chemicals, oil, and natural pollutants such as soil, animal waste, and bacteria.

**Preparation:** Cut the sponge into a simple fish shape, about 3-4 inches long. Crush cookie. Put torn paper, crushed cookie, rice, and drink mixes in individual small containers. Cover labels of syrup bottle with colored paper. Label syrup bottle "oil," rice "bacteria," cookie "animal waste," chocolate drink powder "soil," green drink mix "fertilizer," red drink mix "chemicals," and paper or peanuts "litter".

### MATERIALS NEEDED:

- large clear 1-gallon container (e.g. pickle jar)
- rectangular kitchen sponge
- yellow food coloring and medicine dropper
- packing peanuts or small pieces of torn paper
- 1 chocolate sandwich cookie
- 1 tablespoon of chocolate powdered drink mix
- 1 tablespoon of rice
- chocolate syrup
- 1 teaspoon each of red and green drink mix
- small containers to hold each material
- labels to write on
- colored paper to cover syrup bottle labels
- tape
- pitcher with clean water

### DIRECTIONS:

1. Pour about 1 cup of water into the jar. Put a small drop of yellow food coloring in the water representing natural pollution in the lake (decayed plant and animal matter, fish waste, etc.) Ask the students if the water looks polluted. Add enough water to fill the jar halfway. Does it look polluted now? Explain to the students that although they can barely see it, there is still some pollution. Some things that pollute our water cannot be seen at all (like bacteria), yet the water is still polluted.
2. Bring out the sponge fish. (Optional-have students name the fish.) Explain that this is the lake the fish lives in as you put it in the water. There are some natural pollutants in the water, but it is pretty clean. Natural processes do a good job of cleaning the water.
3. Are all lakes this clean? Why not? Many human actions cause water pollution. Solicit from students materials that cause pollution. Put the corresponding material in the water. Discuss what happens as each material is introduced into the water, and how healthy the fish is going to be with all that pollution. (It may even die.) Follow with a short discussion of whether or not the students would want to use this water for drinking, bathing, cooking or swimming.

Brief background information on each additional pollutant is provided on the next page.

## BACKGROUND INFORMATION

**Soil:** Iowa has some of the richest soil in the world! However, when soil is bare or unprotected, wind and water can easily pick it up and move it, in a process called erosion. This can happen in farm fields, gardens, and even construction sites. Did you know? Soil is Iowa's #1 pollutant.

**Fertilizer:** Fertilizer is food for plants. However, what happens if fertilizer is applied right before a rainstorm? The plants haven't had a chance to use all of the fertilizer, so it can easily get washed away into streams, rivers, and lakes, where it becomes food for algae!

**Chemicals:** Chemicals such as pesticides are used to get rid of unwanted insects or plants (weeds, dandelions, etc.). Like fertilizer, these chemicals can also easily wash off the land into rivers, streams, and lakes.

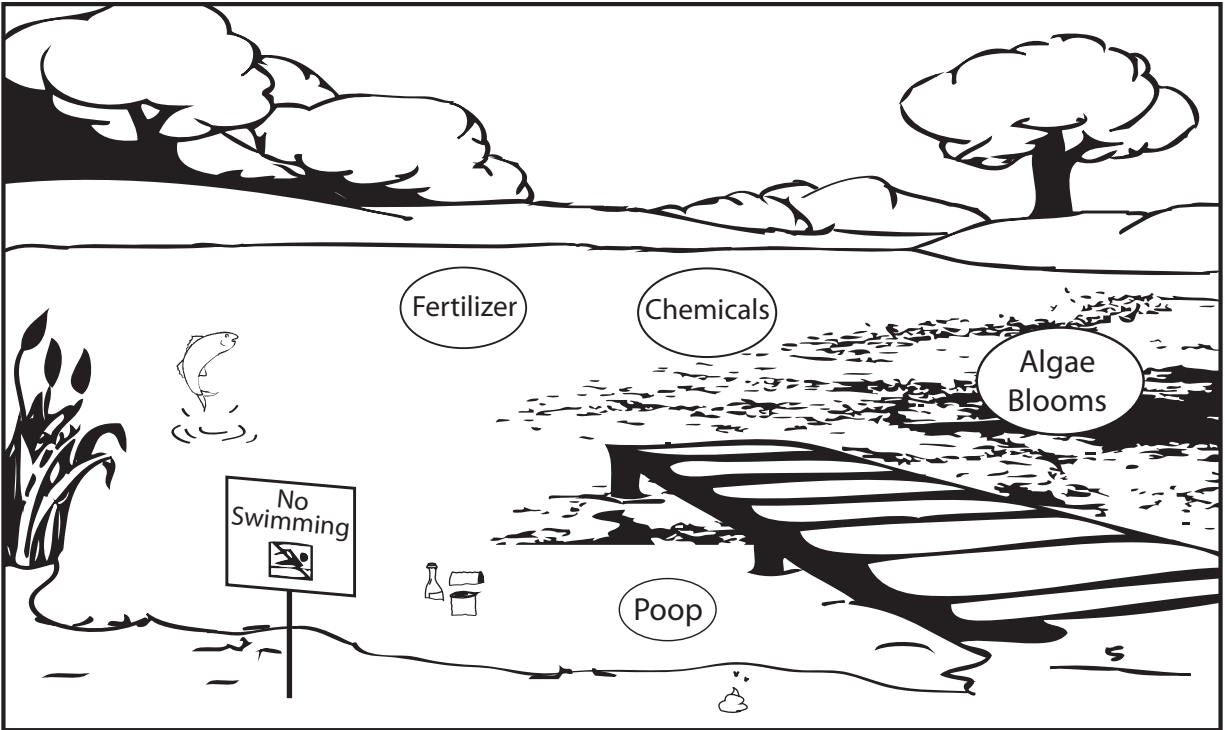
**Animal Waste:** It's a fact of life... everybody poops! Think about the waste from dogs, cats, geese, deer, cows, and pigs... Bacteria are in the waste, so bacteria gets in the water each time an animal's poop gets in the water or when rain water passes over animal waste.

**Oil:** Oil can come from many sources, such as factories and industry, and can be a particular challenge in urban settings. Think about the big parking lots that you'd find at Walmart or Target or at a football stadium – there's a lot of potential for oil and gas to leak from all those cars!



Name \_\_\_\_\_

Directions: This is a polluted lake. Put a red "X" on things that we shouldn't put in the water.



Directions: Draw and color what a healthy lake looks like to you. Plants and fish and other animals live there. People can go swimming or fishing, too! Give your lake a name; write its name on the sign at the beach.

