



WHO DIRTIED THE WATER?

This lesson plan developed by:



**New England
Aquarium**

Overview:

This interactive story asks students to take on the roles of different historical and modern characters who have had a role in the pollution of a body of water. As the story is read, each character in turn adds a film container full of pollutants to a jar of clean water representing the body of water. Designed by the New England Aquarium, the story uses Boston Harbor and the Massachusett people in its narrative. These specifics can be modified to fit any local polluted body of water (e.g. the Hudson River and the Lenape, or San Francisco Bay and the Muwekma Ohlone. You can research your own local tribes, or contact Sailors for the Sea for help).

Key Concepts:

This activity should evoke a mood. Though it contains a lot of specific information on sources of pollution, and much material for discussion, it is primarily a dramatic look at the plight of our coastal waters. Students should develop a greater concern for local waters and an understanding that we are all partially responsible for water pollution. Solutions will require many groups working together.

Materials:

- Clear wide-mouth jar (one gallon capacity)
- Masking tape
- Permanent marker
- Long spoon
- 15 small containers labeled and containing the following:
 - River: sand
 - Salt marshes: dry grass
 - Shellfish: crushed seashells

Who Dirtied the Water? (cont.)

- Massachuseuck: crushed seashells
- Settlers: organic garbage (items that would go in compost)
- Farmers: potting soil
- Houses: toilet paper
- Runoff: potting soil
- Fishermen: nylon fishing line
- Boaters: small plastic pieces
- Laundromats: dish detergent
- Cleaning: baking soda
- Sunbathers: paper and plastic trash
- Factories: vinegar
- Port: vegetable oil (add black paint or food dye)

Set-up Prior to Activity:

Put a piece of masking tape around each small container, and label the containers. Setting up this activity takes some time as you need to collect various “pollution” materials. Most, however, should be available in your kitchen or house. Feel free to substitute. Before beginning the activity, fill the gallon jar 4/5ths full of tap water.

Duration:

1 hour

Physical Activity:

Low

Activity:

1. Place the water jar where everyone can see it and can easily walk over to it.
2. Distribute all the film containers to students or pairs of students, with instructions not to open the containers.
3. Explain that they have all become characters in a story. You will be telling the story, but when their character is mentioned they should come forward and pour the contents of their film container into the jar. It also helps if students tell the class what they are pouring into the water. Since some film cans contain less toxic substitutes for the real thing, in these cases students should say what the contents stand for, i.e. “cleanser,” not “baking soda.” Character names are in CAPITALS in the story, to help you prompt students while reading.
4. After each character adds their pollutants, stir the water with the stir stick and continue telling the story.
5. The story should be read slowly, allowing each character to come forward. The repeating questions form a sort of chorus, and should be read one by one, with pauses for the group to answer.



Who Dirtied the Water? (cont.)

The Story

Once upon a time there was a beautiful piece of land. The land was surrounded on three sides by a bay, a bay filled with clear ocean water and dotted with green islands. (Point to the jar.) Fish lived in the water, and the land was covered with trees. Both the land and the bay teemed with wildlife.

Chorus (wait for group to answer each question):

Would you want to swim in this bay?

Would you eat fish caught in this water?

Would you like to go boating on this bay?

A RIVER ran along one side of the land, carrying sediment and sand with it as it flowed into the bay.

SALT MARSHES grew along the edges of the bay. Grasses from the salt marshes washed into the bay and became food for the fish.

SHELLFISH grew in the shallow water, including clams, oysters, and scallops.

A small group of people lived on the land near the bay. They called the land Shawmut. The people called themselves the MASSACHUSEUCK. The Massachuseuck fished for food and shellfish in the bay. They also dumped some of their garbage near the bay. In fact we still find the piles of the shells they left.

Chorus (answers will vary as students consider each question in light of the new substances added to the bay.):

Would you want to swim in this bay?

Would you eat fish caught in this water?

Would you like to go boating on this bay?

After many years SETTLERS from Europe came to live on the land called Shawmut. The settlers built a town much larger than the Massachuseuck villages. Some of the town's garbage was also dumped into the bay.

As the town grew, the settlers filled in the salt marshes to provide more land on which to build. FARMERS cut down trees to clear their fields. Without trees and marshes, rain carried soil into the bay.

Chorus:

Would you want to swim in this bay?

Would you eat fish caught in this water?

Would you like to go boating on this bay?

Who Dirtied the Water? (cont.)

More and more HOUSES and shops were built, and the town grew into the city of Boston. Sewer pipes were constructed to remove the waste from houses and bathrooms. The sewage flowed through the sewer pipes into the bay. Since the salt marshes had been filled in, RUNOFF water washed pollution from the streets directly into the bay.

FISHERMEN found that nets made of plastic or nylon were stronger than those made of rope. Sometimes these plastic nets got lost in the water.

Fishermen and other BOATERS sometimes threw trash overboard.

Chorus:

Would you want to swim in this bay?
Would you eat fish caught in this water?
Would you like to go boating on this bay?

The city of Boston continued to grow. The city built LAUNDROMATS where people could wash their clothes. The laundry detergents went down the sewage pipes and into the bay. People CLEANING their houses used poisonous cleansers and drain cleaners, which also flowed through the sewage system and into the bay.

Even swimmers and SUN BATHERS going to enjoy the beach sometimes left garbage on the beaches, or balloons would float out over the ocean and pop.

FACTORIES built along the water's edge often dumped their wastes and chemicals into the water.

And as Boston Harbor (as the bay was now called) grew into a major sea PORT, large oil tankers and ships came to unload their cargo. Sometimes oil spilled into the bay.

Chorus:

Would you want to swim in this bay?
Would you eat fish caught in this water?
Would you like to go boating on this bay?
Who dirtied the water?
Who is responsible for cleaning it up?

Discussion:

- Discuss how students felt.
- Do students know of other local bodies of water that have been polluted? Who is responsible for their pollution?
- Talk about the different pollutants added. Is all pollution equally dangerous? Can students invent categories of pollutants?



Who Dirtied the Water? (cont.)

- Discuss actions you can take to help reduce your class's polluting impact on water. Cutting down on toxic household products is one way. Water conservation also helps because it allows sewage treatment plants to work more effectively. What other steps can you take?

Ocean Literacy Principles:

Ocean literacy is an understanding of the ocean's influence on us, and our impact on the ocean. There are seven [Ocean Literacy Essential Principles](#) that all people of our blue planet should have an opportunity to learn and understand. This activity touches upon the following Essential Principles:

1. The Earth has one big ocean with many features
6. The ocean and humans are inextricably interconnected
7. The ocean is largely unexplored

Further Your Impact with Sailors for the Sea Powered by Oceana:

As sailors and water-lovers, you are among the first to notice changes to our seas such as fewer marine animals, more pollution and damaged marine habitat. Through our Green Boating initiative, Sailors for the Sea Powered by Oceana provides opportunities for you and your community to address pressing ocean health issues. As a Green Boater, you will be provided with the information, resources and access to combat marine plastic pollution, prevent habitat destruction, source responsible seafood and protect marine animals. From demanding plastic-free alternatives to choosing sustainable seafood, your voice and actions are an important part of restoring the abundance of our oceans and protecting marine habitats. [Join our growing Green Boating Community today.](#)