

DOLPHIN RESEARCH CENTER

Who Polluted the Bay?

Grade Level: 6th-8th

Objectives: Students will be able to identify human causes of environmental degradation in the Gulf of Mexico and beyond.

Florida Sunshine State Standards:

Science

SC.G.2.3.4 The student understands that humans are a part of an ecosystem and their activities may deliberately or inadvertently alter the equilibrium in ecosystems.

National Science Education Standards (Life Science):

Content Standard F (5-8) - Populations, Resources and Environments: Causes of environmental degradation and resource depletion vary from region to region and from country to country.

Background: Relevant background information can be found in the *Threats to Dolphins* and *Personal Solutions* information files.

Materials:

- 18 labeled film canisters, filled and labeled as directed below
- 1 clear container of water (1-2 gallon size)
- ***Who Polluted the Bay?*** story
- Internet and print resources for student research

Teacher Prep Notes: Review the story that accompanies this lesson plan. The story contains certain elements that are specific to the Florida Keys, where Dolphin Research Center is located. You may want to make some modifications to the story in order to adapt it to your geographical location.

Prepare and label the film canisters ahead of time. Use the substances and amounts provided on the list below. Each student should have at least one canister for the activity. For classes larger than 18 students, duplicate some of the canisters so each student has one. For classes smaller than 18 students, some students may have more than one canister.



Who Polluted the Bay?

Character	Substance	Quantity Needed
Construction site	Soil	Half full
Tree leaves	Leaves	One dry leaf
Family	Newspaper	One small piece
Motorboat driver	Vegetable oil	Half full
Picnic	Colored paper	One small piece
Beach party	Plastic grocery bag	One small piece
Person fishing	Monofilament fishing line	One small tangle
Gardener	Baking soda	Half full
Cattle rancher	Muddy water	Half full
Citrus farmer	Baking powder	Half full
Phosphate mine	Baking soda	Half full
Old dam	Muddy water	Half full
Homeowner	Yellow water and toilet paper	Half full + Small piece paper
Laundromat	Soapy water	Half full + One drop liquid soap
Cars	Vinegar	Half full
Electric power plant	Cocoa powder/syrup/water	Half full
Groundskeepers	Baking soda/powder mix	Half full
Mysterious liquid	Water and food color	Half full + One drop red & blue

Fill one large clear container with water, and place it where all of the students are able to see the container throughout the activity.

Procedures:

1. Distribute the canisters to the students. Explain that they should not open their canisters, and direct them to keep their character a secret.
2. Explain that you are going to tell them a story about the Gulf of Mexico, and that each student will play a part in the story. Students should look at the label on their canister to determine their character. When a student hears the name of his/her character, the student should open the canister and empty the contents into the water.
3. Read the story aloud. Pause to allow students to add the contents of their container and respond to the questions posed.
4. It is important for students to understand that pollution in the bay does not only come from sources located directly on the bay. Forty percent of the continental U.S. drains into the Mississippi River basin. Individuals in distant states like Wisconsin can have a direct impact on the waters in the Gulf of Mexico.
5. There are many causes of environmental degradation discussed in the story. Pose the following questions to the students:
 - Are these sources of environmental unique to the Gulf of Mexico? (No. These sources of pollution are all too common in many areas of the world.)



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- Are these the only sources of environmental degradation in the world? (No. Different regions experience different types of environmental degradation, and these sources are not limited to pollution.)
6. Divide students into pairs or small groups, and assign each group a specific region of the globe to examine. (Examples might include the Chesapeake Bay, Australia’s Great Barrier Reef, Peru’s Rainforest, and China’s Yangtze River.) Have the students research their assigned region to determine the main types of environmental degradation and its effects on the ecosystem.

Wrap Up: Invite students to share their research with the class, and ask them to compare the types of environmental degradation in regions around the globe.

Taking it Further:

- Ask students to generate a list of ways they can reduce negative impacts on the environment. Put these suggestions into practice! (Suggestions may include recycling, using natural cleaners, using fuel-efficient cars, and helping to paint warnings on city storm drains that empty out into the ocean or other waterways.) Have students record the actions they will take on a self-addressed postcard, and collect the postcards. Send the students their postcards during the summer so they can be reminded of the long-term commitments they have made.

NOTE: Parts of this lesson were adapted from Clearwater Marine Aquarium’s “Who Polluted the Bay?” activity.

