



**Title: Cleaner Harbor Tour**

By Katie Gavenus, Children of the Spills, <http://childrenofthespills.org>

**Theme:** Preventing and cleaning-up small amounts of pollution can make a difference for animals, people, and ecosystems.

**Objectives:**

- Students will identify and analyze non-point sources of pollution in a local area.
- Students will learn about efforts to minimize pollution.
- Students will create an action plan to prevent and clean-up pollution.

**Duration:** 60-75 minutes

**Age Range:** 6<sup>th</sup>-12<sup>th</sup> Grade

**Materials:**

- Clipboards (1 per group)
- Pollution Data Sheet
- Pens or pencils

**Background:**

Although major oil spills have devastating impacts on ecosystems, as much as 10 times more oil makes its way into the oceans each year from improper disposal of motor oil and oil leaks. In coastal areas, oil from tiny spills, leaks, and bilge water from recreational, subsistence, and commercial vessels can be a major problem.

Oil is just one type of pollutant that can have adverse short and long-term effects on animals, people, and ecosystems. For example, concentrations of mercury can be magnified as you go up the food chain. Mercury pollution, which is released by the burning of coal as well as many other sources, is concentrated in upper trophic level predatory fish.

**Preparation:**

This activity works best as a field trip to a local harbor or port, especially if you are able to meet with the Harbormaster or other official or volunteer who works to keep the harbor clean. If you have no harbor or port to visit, a quick trip to the school parking lot will probably yield evidence of motor oil. Try to time your visit when there won't be much traffic.

**Introduction:**

Explain to students that you are going to be investigating the local harbor (or school parking lot), looking for evidence of oil pollution and other types of pollution. Set expectations for safe and respectful behavior, being mindful that it is a working harbor (or busy parking lot).

**Activities & Procedures:**

When you arrive at the harbor, divide students into groups of 4-6 and provide each group with a clipboard, data sheet, and pencil. Instruct the students to examine the area and look for evidence of pollution. Any pollution they find, whether it be oil, litter, etc. should be recorded and described on their data sheet. If they can't identify the pollution, direct them to sketch it. If you have enough adults for each group (or if students are mature and harbor is especially safe, small, and not busy) assign each group a section of the harbor to examine. If you have to keep the groups closer together, spread out a bit but move through the harbor as a larger group.

After 15-20 minutes, have the groups analyze their data and present the most common type of pollution. Discuss any differences in the data sets.

Before you leave the harbor, look for proper oil disposal sites and posters about clean boating.

If possible, meet with the Harbormaster or other harbor employee/volunteer at the harbor or invite them back to your classroom. Ask them to explain a little bit about efforts to keep the harbor clean. Provide a chance for students to ask questions. (If you have visited the parking lot, ask a custodian or janitor to speak with the class, or ask someone from your community's waste management facility).

**Wrap-Up:**

Discuss possible impacts of pollution in the harbor. How does it affect the students? Ask students how the pollution gets there. Who is responsible for it? Have students raise their hands if they know someone who has had an accidental fuel spill, oily bilge, or oil leak before. Brainstorm ways to minimize pollution in the harbor or parking lot. Work as a class to implement one idea for action, such as providing oil absorbent pads to boaters, or have each student create a poster or radio public service announcement about preventing pollution.

**Evaluation:**

Assess student data sheets and analysis for completeness, neatness, and accurate work. Because the characteristics of each harbor will vary, use common sense and your own observations to evaluate answers on the data sheet. Observe student

cooperation, participation, and adherence to safety guidelines during group work.



## Cleaner Harbor Standards

Science As Inquiry and Process: Students develop an understanding of the processes and applications of scientific inquiry.

### SA3

Students develop an understanding that culture, local knowledge, history, and interaction with the environment contribute to the development of scientific knowledge, and that local applications provide opportunity for understanding scientific concepts and global issues.

The student demonstrates an understanding that interactions with the environment provide an opportunity for understanding scientific concepts by:

[6] SA3.1 gathering data to build a knowledge base that contributes to the development of questions about the local environment (e.g., moose browsing, trail usage, river erosion)

Science and Technology: Students develop an understanding of the relationships among science, technology, and society.

### SE1

Students develop an understanding of how scientific knowledge and technology are used in making decisions about issues, innovations, and responses to problems and everyday events.

The student demonstrates an understanding of how to integrate scientific knowledge and technology to address problems by:

[7] SE1.1 describing how public policy affects the student's life (e.g., public waste disposal)

[8] SE1.1 describing how public policy affects the student's life and participating diplomatically in evidence-based discussions relating to the student's community

### SE2

Students develop an understanding that solving problems involves different ways of thinking, perspectives, and curiosity that lead to the exploration of multiple paths that are analyzed using scientific, technological, and social merits.

The student demonstrates an understanding that solving problems involves different ways of thinking by:

[6] SE2.1 identifying and designing a solution to a problem

[7, 8] SE2.1 identifying, designing, testing, and revising solutions to a local problem

[6, 7] SE2.2 comparing the student's work to the work of peers in order to identify multiple paths that can be used to investigate a question or problem

[8] SE2.2 comparing the student's work to the work of peers in order to identify multiple paths that can be used to investigate and evaluate potential solutions to a question or problem