



## LESSON 8

### Ocean Pollution

#### Grades 4 - 7

*be broken down into harmless substances by the action of living organisms.*

### Objectives

- To determine actions that can be taken to ensure healthy oceans.
- To assume responsibility for their own actions.
- To make a stronger connection between what students do and how it can affect the ocean.

**B.** Talk about items that are biodegradable and non-biodegradable.

**C.** Show video: [This Pretty Planet](#) of Tom Chapin Live in Concert singing the “Good Garbage” song.

What does Tom Chapin mean by ‘Good Garbage’?

*A. Garbage that breaks down easily. It decomposes and is biodegradable.*

What does decompose mean?

### Materials

Pie pans, blue food colouring, vegetable oil, water, sponges, newsprint, magazines, plastic 6-pack holder

**D.** Ask students if they know why plastics and styrofoam are a big problem when they are in the ocean.

### Concepts

- What we do or don’t do has an effect on the ocean.
- Difference between biodegradable and non-biodegradable.
- Pollution can be difficult to clean up in the ocean.

Explain how birds, animals and fish can get caught in plastic 6-pack holder rings. Some are now being made that will break down more quickly in the sun – they are photodegradable. Turtles and other marine creatures can eat plastic bags, mistaking them for jellyfish and other food. The same can happen with styrofoam. As well, these items last for a long time in the ocean.

### Activities

#### 1. Pollution

**A.** What is pollution?

*A: garbage, man-made waste, something that impairs the purity of the water*

**E.** Have students guess how long it takes for biodegradable and non-biodegradable items to break down.

**B.** Ask students to brainstorm examples of different types of ocean pollution, both visible and invisible.

*A. eg glass, plastic, chemicals, fertilizer, fishnets, junk, tires, soap, oil, sewage, etc*

Monofilament line, netting	600 years
Styrofoam cups and pellets	500 years
Plastic six-pack rings	450 years
Aluminum cans	80 - 100 years
Tin cans	50 - 100 years
Orange peel	6 months

**C.** How does pollution get into the water?

*A: thrown off boats, left on beach, ocean currents, dumped into rivers that lead to the sea, dumped directly into the ocean, etc*

Show Resource Pamphlet “**Think Don’t Throw**” from Western Pacific Regional Fishery Management Council, Honolulu, Hawaii, [www.wpcouncil.org](http://www.wpcouncil.org).

#### 2. Biodegradable and Not.

**A.** What does biodegradable mean?

*A. Biodegradable means that something can*

#### 3. Cleaning Ocean Pollution Activity

**A.** Set up stations for groups of students. Each station has a pie plate full of water with blue



food colouring in it (so students can see the oil more easily). Put a tablespoon of vegetable oil in each plate of water. Give each group some sponges, newspaper strips, string, magazine strips and a yogurt container.

Tell each group that they must try to remove the oil from the pie plate using each of the material provided. They must remove as much oil and as little water as possible. The cleaned-up oil must then be put into the yogurt container. Each group needs to explain which method worked best for them and why.

When the groups have finished, discuss the challenges there would be in cleaning up an oil spill on the ocean. Discuss how an oil spill would affect marine life in the area. (It can clog fish gills, it can poison birds that try to clean it off their feathers etc)

**B.** Dip a feather in oil. Compare it to a feather dipped in water. How does the oil affect the feather?

**C.** Show students pictures of the effects of different kinds of pollution. Examples include oil-soaked birds, oil covering beaches, birds caught in plastic 6-pack holders, whales entangled in fishing gear, fish entangled in abandoned nets, etc.

## Conclusion

- What can you do to help the ocean?
- At home? At school? In your surroundings?
- What do you already do? Examples include beach clean up and the 4 R's - reduce, reuse, recycle and refuse.
- How does what you do make a difference? List at least 5 ways.

## Extension

**Set up the following 4 stations in the classroom.**

**A.** Activity from *Oceans for Every Kid* by Janice VanCleave (page 35).

Compare the pie charts of the percentage of different items thrown overboard (mostly paper) to the percentage of items found during a beach clean up (mostly plastic). Ask students why they think that happens.

**B.** Break Down Time

Put several items in a basket and ask students to put them in order of which degrades the fastest. On a card, write: "Put the items in order from fastest to break down to slowest to break down." with the answer on the back. Items could include paper (1 month), a lemon (6 months), a tin can (50-100 years), aluminum cans (80-100 years), plastic six pack rings (450 years), styrofoam pellets (500 years), fishing line (600 years).

**C.** Activity from *Oceans* by Adrienne Mason. Each station requires plastic bags, balloons, elastics, and a model of a turtle.

Students put the elastic band on their thumb and pinky finger. They try to remove it without using their other hand or rubbing it against anything. Was it difficult or easy? What would it be like if an animal was caught in an elastic?

Students look at the other materials at the station and answer the questions:  
What garbage can be a danger to turtles, birds and other sea creatures? Why?

**D.** Put vegetable oil on some feathers and fur. Place them in a ziplock bag. Include another bag that has feathers and fur without oil on them. "Compare the fur and feathers. How would oil affect an animal's fur or a bird's feathers? How could oil affect fish?" (Put models of fish at the station.)

Discuss what the students learned at each station. Discuss ways pollution can be prevented.