PLASTIC IN THE OCEAN

OVERVIEW

Students will monitor the *plastic* waste production in their own households, research its effect on freshwater and marine life, and propose various ways to lessen the problem.

CONCEPTS

- Plastic waste production has potential negative impacts on wildlife in both the marine and fresh-water environments.

MATERIALS

- Plastic waste from home

PREPARATION

The major purpose of this activity is to enhance students' awareness of the hazards of plastic waste for wildlife in aquatic environments. There are a lot of different places that you can collect useful information about plastic *litter* and its impacts on wildlife. You might wish to contact the Center for Environmental Education in Washington D.C. for more information.

Have the students collect and save every piece of plastic waste produced in their homes over a two day period.

PROCEDURE

Engagement

In both marine and fresh water environments, plastic waste has major potential negative impacts on the wildlife. How much plastic trash does a household produce in two days? What happens to all of this plastic? How can it harm animals? What, if anything, can we do about it?

Activity

1. Collect every piece of plastic waste produced in your home over a two day period. Make sure that you rinse them before you bring them to school. If you have too much trash, you might wish to bring a representative sample.
2. Separate your plastic into different categories. Classify them in terms of how you think they might be perceived as food for animals: "Very Likely To Be Perceived As Food," "Not Very Likely To Be Perceived As Food," etc. Can you think of any animals in the ocean that might attempt to eat the plastic (e.g., animals that eat jellyfish might confuse a plastic bag as a food source.)? Also classify the plastic according to the likelihood of animals becoming entangled with them.
3. Hypothesize about how these materials might affect aquatic animals. Research current literature and check your hypothesis against your research. Summarize what you have learned about the potential hazards to aquatic life from plastic waste.
4. How might plastic end up in the ocean? List possible mechanisms. Research what others have found on this issue.

5. Survey your school grounds or your community for plastic litter. Where did you find most of it? See if you can develop an action plan for your community to increase the awareness of the problem.

Explanation

Experts estimate that over 6 million tons of litter enter the sea each year. A significant portion of this comes from merchant ships and the practice of dumping garbage at sea. Among the most damaging of the solid wastes that are dumped are non-*biodegradable* plastics. This is because plastics do not readily decay. Moreover, plastics float and accumulate on or near the ocean surface, unlike most other trash components. It is estimated that commercial fishing fleets have lost nearly 300 million pounds of plastic in a single year. It is this plastic netting material that may be the greatest hazard to marine life. Once entangled in these nets, nearly all animals die.

Scientists estimate that over one million seabirds and over 100,000 marine mammals are killed each year by plastic trash. Plastics have been found in the stomachs of whales, dolphins, fish, birds, and manatees. Leatherback turtles often mistake plastic bags for jellyfish, one of their favorite foods. Plastics that accumulate in the intestines of these animals cause them to starve to death.

There are positive steps that are being made in the area of plastic *pollution*. Regulations to control pollution near the coasts and to protect marine animals can be very effective. There are new laws being developed to restrict dumping of plastic at sea in certain areas. Also, recycling is important—the more that we recycle, the less garbage we generate.

On another level, researchers are working on some new approaches to help solve ocean problems. Biodegradable plastic is being tested. Some wildlife specialists are experimenting with ways to use plastics to provide anchoring sites for organisms in lakes where grasses no longer grow. Some are using plastic bottles and jugs to provide a microhabitat for certain fish.

Extension

Have your students contact environmental, conservation, animal welfare, and wildlife groups to see what is being done about the impact of litter on local wildlife and set up a mechanism for volunteering.

Find out if there are any laws in place in your city, county, or state that attempt to solve the problem of plastic pollution. Are there any national or international laws? Are there any bills before the legislature that deal with plastic pollution?

Contact a local recycling center to discover the types and amounts of plastic that they are helping to recycle. If you find out the approximate number of households the center serves, then you can estimate the amount of recycled material per household and compare with that of your own household. You might ask your contact person at the recycling center if he or she has noticed an increase in the volume of recycled plastics over time.

Vocabulary

biodegradable *litter* *plastic*
pollution

Source

Adapted from Plastic Jellyfish. 1987 Western Regional Environmental Council. Pg. 158 - 161.