

Oily Problems!

Participants learn why birds' feathers must stay clean and well-conditioned and discover how oil in water can hurt birds.

Need To Know

In addition to helping a bird fly, feathers serve many other important purposes. Feathers are essential for waterproofing and for regulating body temperature by providing insulation. Birds produce a special oil that conditions the feathers and keeps them from drying out. They use their beaks to spread the oil, which comes from a gland at the base of their tail feathers. However, another type of oil is not bird-friendly and poses a serious, and even life-threatening, challenge to birds and other animal species when not handled properly.

When oil gets into waterways, birds, fish and other animals run the risk of exposure. If a bird comes into contact with floating oil, its feathers can become saturated and the bird becomes unable to fly, swim, dive, or keep warm. Another way it hurts birds is that they may ingest the oil when trying to preen their feathers.

Most people have heard reports in the news about oil spills and their far-reaching negative consequences for plant and animal life. NASA and the Smithsonian Institute estimate that 5% of the oil that spills into the ocean comes from major oil spills, such as the Exxon Valdez spill in Alaska in 1989. Although 5% may sound like a small percentage, that adds up when you look at its effect. For example, the Exxon Valdez accident spilled 10.2 million gallons of oil, which killed an estimated 250,000 seabirds and 250 Bald Eagles, 2,800 sea otters, 300 harbor seals, 22 whales, and millions of salmon and herring eggs. The government and oil companies are working to avoid repeating similar problems by creating more safeguards, having better navigation equipment, providing more safety training, and using double-hulled tankers (which store oil in a protected, inner chamber), and having more supplies and tools on hand in case such an accident happens again.

Oil spills aren't the only way that oil enters the ocean and waterways. The Academies of Science report that "nearly 85% of the 29 million gallons of petroleum that enters North American ocean waters each year as a result of human activities comes from land-based runoff, polluted rivers, airplanes, and small watercraft." In other words, more oil and harmful pollutants are washed into our waterways, and from there into the oceans, by leakage of oil by everyday

NEED TO GET

- Poster board
- Copies of Feather Cleaning Procedures

PROCEDURE I: WHAT A NORMAL FEATHER IS LIKE

- Feathers (these can be purchased in craft or art supply stores, or possibly found in feed stores)
- A basin of water

PROCEDURE II: WHAT AN OILY FEATHER IS LIKE

- A basin of water
- Cooking oil (dark sesame oil, found in the Asian section of many grocery stores, best mimics the dark color and strong odor of automobile oil)
- Soap or dishwashing detergent
- Paper towels
- A trash can
- Props such as motor oil cans, detergents, car-washing products, pictures, or posters

TIME

Preparation: 40 minutes
Activity: 10 minutes



ZOOM IN, ZOOM OUT!



Students can make a real difference to help the environment. Don't Be Crude, a nonprofit motor oil recycling program, was created by three Texas 4-H'ers in 1997 when the three girls were 11 and 12 years old. The program now sponsors 18 sites in a seven-county area and recycles 100,000 gallons of used motor oil every year. In 2001, the three girls received the National Presidential Environmental Youth Award for their dedicated recycling efforts.

To learn more about Don't Be Crude and how you can make a difference in your own community, visit www.dontbecrude.org.

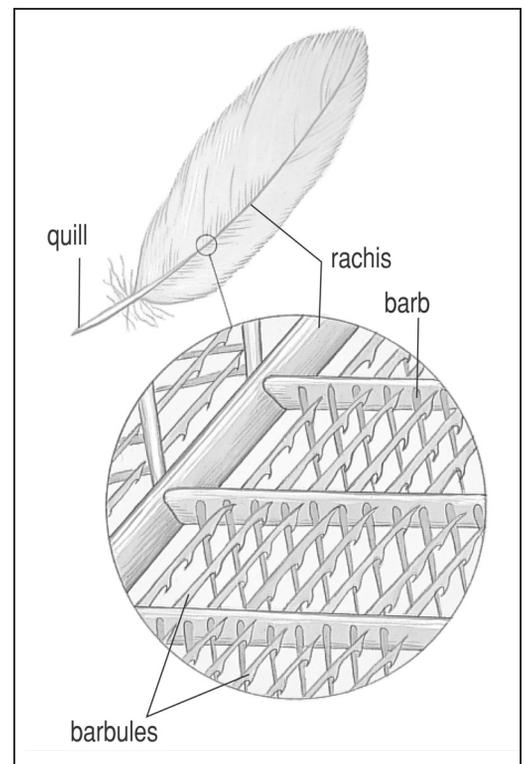
In addition to helping a bird fly, feathers are essential for waterproofing and for regulating body temperature by providing insulation.

people and smaller businesses. For example, when cars leak oil on the road, rain washes it into the storm drains where it is carried into waterways and on to the ocean.

People can help to reduce energy consumption by practicing a variety of conservation measures such as carpooling to school and work, purchasing high-mileage automobiles and energy efficient appliances, using mass transit more often, and riding bikes or walking for short errands. Drivers also can make certain that their cars and motorboats are properly maintained. Students can tell car owners (like their parents), to make sure they dispose of used motor oil properly—as some people have been found to deliberately dump their used oil down storm drains to get rid of it! Another important action you can take is to help inform others about careful use of oil.

Getting Ready

1. Collect the materials and practice the procedures. *Note: Collecting feathers from most wild birds is illegal. Use only feathers from domesticated birds, such as chicken feathers, found in most hobby and craft stores (some stores may even donate bags of them).*
2. Make a sign for your booth. To add decorations or props, display cans of motor oil and detergents that might get into waterways by careless consumers. You may want to display pictures of oiled birds or an oil spill. Make a poster that says, "For the birds' sake, dispose of motor oil properly. Don't dump it!"
3. Photocopy a set of instructions for the Taking Flight! procedures, to be placed by each basin on festival day.



Taking Flight!

Festival participants participate in a simulation of how a bird's feathers are cleaned after exposure to crude oil or motor oil.

Procedure I:

What a Normal Feather Is Like

Normal feathers are water resistant and are easily smoothed into the proper shape. Try it and see!

1. Feel the feather between your fingers.
2. Pull apart the barbs (individual strands of the feather) and then “zip” them back together.
3. Dip your feather into the clean water.
4. Pull apart the barbs and “zip” them back together again.

Procedure II:

What an Oily Feather Is Like

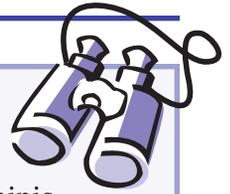
Oil on feathers? What a mess! You can try to wash oiled birds, but it's not easy....

1. Dip your feather in the water with oil.
2. Pull apart the barbs and then “zip” them back together.
3. Put the oily feather in the soapy water and wash it.
4. Pull apart the barbs and then “zip” them back together.
5. Notice how the zipping action is different from the feather that had just water on it.

Quiz Your Guests

1. How can oil spills be prevented?
2. What can you do to prevent oil and other pollutants from getting into our waterways?

**ZOOM IN,
ZOOM OUT!**



Call your city administration or ask a local gas station for places that accept used automobile oil for recycling or proper disposal. Type up a list of nearby places and photocopy it for a handout at the booth. Ask students to research new types of cars that are fuel efficient. They can share this information with their parents and other drivers they know.

If a bird comes into contact with floating oil, it may become unable to fly, swim, dive, or keep warm.

IN STEP WITH SCIENCE STANDARDS

STANDARD A: SCIENCE AS INQUIRY

- Understandings about scientific inquiry

STANDARD C: LIFE SCIENCE

- Structure and function in living systems

STANDARD F: SCIENCE IN PERSONAL AND SOCIAL PERSPECTIVES

- Understanding risks and benefits



Following Up

Oily Problems!

What Did You Learn?

1. How was the zipping action of the feather affected by the different water conditions?
2. What are some of the actions we can take to keep our waterways clean?
3. How can you find out about recycling used motor oil in your community?

Wanted: Your Feedback

1. How successful do you think this activity is? Would you change the activity in any way?
2. Describe what you learned from doing this activity.
3. Did you use posters and props at your station booth?
Were these effective tools for learning about oil and our waterways? Why?

Question for Reflection

Recent technological advances in transportation of oil, such as double-hulled tankers, have made the transport of oil much safer. Are you aware of any other improvements in technology related to the oil industry?

