
SANDY BEACH SCAVENGER HUNT

FOR THE TEACHER

Discipline

Human Interaction

Themes

Environmental Ethics

Synopsis

Students investigate the contents of a demonstration wastebasket to recognize the types of garbage that wash up at the beach.

Key Concept

Reducing the amount of human garbage can decrease the impact of pollution on the ecology and beauty of the sandy beach habitat.

Science Process Skills

observing, communicating, comparing, organizing, applying

Vocabulary

biodegradable

waste

landfill

garbage

disposable

organic

packaging

precycle

recycle

MATERIALS

For Demonstration activity

- lots of paper: white, colored, glossy, newspaper
- cardboard box
- glass pop bottle, small jar
- food product (apple core, orange peel)
- Styrofoam cup
- paper cup

-
-
- aluminum can
 - plastic grocery bag
 - paper grocery bag
 - throw-away plastic toy

INTRODUCTION

Sandy beaches are frequently polluted by various types of garbage that wash up along the shore. Depending on the current drifts and weather, some beaches may be so covered with litter and trash that they are no longer enjoyable or beautiful places to visit. Most of the garbage that washes up on beaches is somewhat resistant to breakdown -- cans, plastic, glass, and Styrofoam. The same materials that wash up at sea are also thrown away in enormous landfills in very large quantity.

Landfills in the United States are filling up rapidly. Our ability to generate trash is far greater than the capacity and number of landfills available for our garbage. Each person in this country now produces an average of 4-6 pounds of garbage each day. The city of San Francisco alone pays \$52,000 a day to dispose of an average of 5 million pounds of garbage! In one year, it is projected that Americans will throw away over 1 million tons of aluminum cans and foil, more than 11 million tons of glass bottles and jars, over 4 1/2 million tons of office paper, and nearly 10 million tons of newspaper.

Recycling is a way to reduce the amount of energy spent on producing packaging materials. For example, by recycling aluminum, it is possible to save 95% of the energy it would take to make new products from raw materials. In 1988, Americans recycled 42.5 billion cans, an all-time high, saving the equivalent of enough energy to supply power to the city of Boston for one full year! "Precycling" is an important first step before recycling: choosing carefully what products to buy in the first place that reduce energy costs and allows for resuability. As consumers set standards for their purchases, producers will meet the "green demand" and provide alternative choices.

Plastics make up 8% of our waste by weight, 20% by volume. Over half of this plastic is packaging. This is the most conspicuous and dangerous pollution on sandy beaches. Every year hundreds of thousands of tons of plastic fishing lines, nets, and packaging are dumped into the ocean where they drift around for years, not sinking or decomposing. Seabirds mistake plastic resin pellets for fish eggs, and sea turtles mistake plastic bags for jellyfish. Gulls are caught with 6-pack plastic rings around their necks with no way to remove them. Plastic strips from shipping containers become wrapped around the necks of seals and sea lions where they tighten as the animals grow. Plastics may be responsible for as many deaths of marine animals as oil spills and other toxic substances. Recycling of plastics is limited because of the vast variety in materials used and lack of affordable recycling programs.

INTO THE ACTIVITIES

Demonstration

Bring in the prepared wastebasket, explaining it is from the faculty lounge or "teacher's room". Pull out some of the newspapers and cover the demonstration table with them. Explain that today the class will investigate a sample garbage collection. Then dramatically dump the contents on the table. Discuss the journey of a load of garbage: from teacher (or student) to wastebasket, from basket to school dumpster, on to the garbage truck, then to a garbage transfer station, and on by truck to the landfill site. Diagram the journey on the board.

Separate the paper out in one pile. Paper makes up half the garbage sent to landfills. Hold up samples of paper pointing out sheets that have only been used on one side or only used in part. Ask students if any of these could have been used over before being thrown out. Which paper can be recycled? (in most places, all white and colored non-glossy paper and all newspaper) Pull out all the cans and bottles and stand them up to one side. Note that these are all recyclable. Plastic bottles bearing the CA Redemption mark can also be recycled. Ask if any students already recycle cans and bottles, or if any have been to recycling centers.

Now look at what is left. Hold up the plastic toy, and ask if anyone has an idea for it. Can it be passed on to someone? Focus on the non-recyclable plastics. Ask how users of those items could have chosen reusable or recyclable products instead (e.g. paper instead of plastic bags, aluminum foil instead of plastic wrap, thermos instead of juice box, etc.). Look at the food item. Explain that most food items can be composted to make soil. Some cities are looking into large scale composting to reduce their waste input into landfills. Ask students if their families or friends have compost piles.

Review which items can be recycled if found on the schoolyard or at the beach: glass bottles, aluminum cans, and plastic CA redemption bottles.

THROUGH THE ACTIVITIES

Schoolyard Clean-up

Divide the class into patrol teams to cover specific areas of the school grounds. Arrange to patrol the area after lunch period. Provide each team with several paper or plastic bags, to allow for separating recyclables from food and plastic. Give each team 10-15 minutes to cover their area thoroughly. Then regroup and compare trash loads. Separate out recyclables and combine remaining trash. You might want to arrange to take photos of the results. These can

make a good school display and generate useful publicity for similar efforts around the community.

DISCUSSION

1. How would garbage get to the beach? (from boats, tourists on the beach)
2. How could people reduce the amount of garbage they generate? What can be reused? What are some disposable products that could be replaced with non-disposables? Record suggestions on the board or large sheet of paper and post them as a reminder for a "Green Classroom".
3. What are some of the containers students bring with their lunches? Which could be replaced with something recyclable? (juice box with thermos, plastic sandwich bag with hard container, lunch bag with lunch box)
4. How would you feel about living near a landfill? Consider truck traffic, the smell of rotting garbage, and presence of gulls and other scavengers.

BEYOND THE ACTIVITIES

Conduct surveys of different classrooms in the school and post the results. Give awards for the Greenest Classrooms.

Adopt a sandy beach to clean up once a month, bringing back recyclables to the recycling center and trash to the dumpster. Keep an ongoing record of the number of pounds of trash you gathered from the beach each month, and use this information to publicize the problem and encourage others to help keep the beach clean.

Have your class visit a local landfill or garbage transfer station to follow the journey of garbage. Or visit a local recycling center near your school. Consider ways the school could set up recycling collection for school garbage.