

The Three Rs of Conservation

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As You Read

What You'll Learn

- Recognize ways you can reduce your use of natural resources.
- Explain how you can reuse resources to promote conservation.
- Describe how many materials can be recycled.

Vocabulary

recycling

Why It's Important

Conservation preserves resources and reduces pollution.

Figure 21

Automobile tires are almost indestructible. They usually are disposed of but can have other useful purposes.

Conservation

A teacher travels to school in a car pool. In the school cafeteria, students place glass bottles and cans in separate containers from the rest of the garbage. Conservation efforts like these can help prevent shortages of natural resources, slow growth of landfills, reduce pollution levels, and save people money. Every time a new landfill is created, an ecosystem is disturbed. Reducing the need for landfills is a major benefit of conservation. The three Rs of conservation are reduce, reuse, and recycle.

Reduce

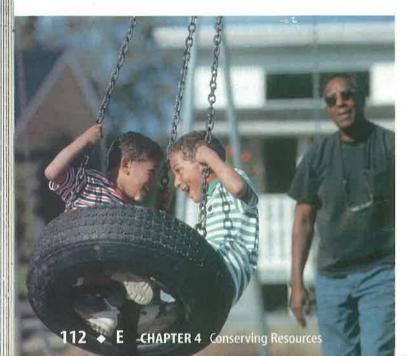
You contribute to conservation whenever you reduce your use of natural resources. You use less fossil fuel when you walk or ride a bicycle instead of taking the bus or riding in a car. If you buy a carton of milk, reduce your use of petroleum by telling the clerk you don't need a plastic bag to carry it in.

You also can avoid buying things you don't need. For example, most of the paper, plastic, and cardboard used to package items for display on store shelves is thrown away as soon as the product is brought home. You can look for products with less

packaging or with packaging made from recycled materials. What are some other ways you can reduce your use of natural resources?

Reuse

Another way to help conserve natural resources is to use items more than once. Reusing an item means using it again without changing it or reprocessing it, as shown in **Figure 21.** Bring reusable canvas bags to the grocery store to carry home your purchases. Donate clothes you've outgrown to charity so that others can reuse them. Take reusable plates and utensils on picnics instead of disposable paper items.



Recycle

If you can't avoid using an item, and if you can't reuse it, the next best thing is to recycle it. **Recycling** is a form of reuse that requires changing or reprocessing an item or natural resource. If your city or town has a curbside recycling program, you already separate recyclables from the rest of your garbage. Materials that can be recycled include glass, metals, paper, plastics, and yard and kitchen waste.

🦊 Reading Check

How is recycling different from reusing?

Plastics Plastic is more difficult to recycle than other materials, mainly because several types of plastic are in use. A recycle code marked on every plastic container indicates the type of plastic it is made of. Plastic soft-drink bottles, like the one shown in Figure 22, are made of type 1 plastic and are the easiest to recycle. Most plastic bags are made of type 2 or type 4 plastic; they can be reused as well as recycled. Types 6 and 7 can't be recycled at all because they are made of a mixture of different plastics. Each type of plastic must be separated carefully before it is recycled because a single piece of a different type of plastic can ruin an entire batch.



What kinds of plastics can be recycled? To find out more about recycling, see the **Recyclable Plastics Field Guide** at the back of the book.

Figure 22

Many soft-drink bottles are made of PETE, which is the most common type of recyclable plastic. It can be melted down and spun into fibers to make carpets, paintbrushes, rope, and clothing.





Research Visit the Glencoe Science Web site at science.glencoe.com and find out how to make your own recycled paper. In your Science Journal, describe how you might use the paper you make.

Metals The manufacturing industry has been recycling all kinds of metals, especially steel, for decades. At least 25 percent of the steel in cans, appliances, and automobiles is recycled steel. Up to 100 percent of the steel in plates and beams used to build skyscrapers is made from reprocessed steel. About one metric ton of recycled steel saves about 1.1 metric tons of iron ore and 0.5 metric ton of coal. Using recycled steel to make new steel products reduces energy use by 75 percent. Other metals, including iron, copper, aluminum, and lead also can be recycled.

You can conserve metals by recycling food cans, which are mostly steel, and aluminum cans. It takes less energy to make a can from recycled aluminum than from raw materials. Also, remember that recycled cans do not take up space in landfills.

Glass Glass bottles and jars can be sterilized and reused. They also can be melted and re-formed into new bottles, especially those made of clear glass. Most glass bottles already contain at least 25 percent recycled glass. Glass can be recycled again and again. It never needs to be thrown away. Recycling about one metric ton of glass saves more than one metric ton of mineral resources and cuts the energy used to make new glass by 25 percent or more.

Problem-Solving Activity

What items are you recycling at home?

any people participate in community recycling programs. Recyclable items such as plastic, glass, newspapers, and metals may be picked up at the curbside or the resident may hire a licensed recycling handler to pick them up. What do you recycle in your home?

Identifying the Problem

The following bar graph shows the recycling rates in the U. S. of six types of household items for the years 1992, 1994, and 1995. How do your and your classmates' recycling rates compare with the recycling rates shown on the chart?

Solving the Problem

1. For one week, list each glass, plastic, and aluminum item you use. Note which items you throw away and which ones you recycle.

Recycling Rates of Key Household Items

60%
40%
20%

Aluminum Yard Old Steel Plastic soda Glass cans waste newsprint cans bottles containers

Source: U.S. EPA, 1996

1992
1994
1995

Calculate the percentage of glass, plastic, and aluminum you recycled. How do your percentages compare with those on the graph?

Paper Used paper is recycled into paper towels, insulation, newsprint, cardboard, and stationery. Ranchers and dairy farmers sometimes use shredded paper instead of straw for bedding in barns and stables. Used paper can be made into compost. Recycling about one metric ton of paper saves 17 trees, more than 26,000 L of water, close to 1,900 L of oil, and more than 4,000 kw of electric energy. You can do your part by recycling newspapers, notebook and printer paper, cardboard, and junk mail.



Reading Check

What nonrenewable resource(s) do you conserve by recycling paper?

Compost Grass clippings, leaves, and fruit and vegetable scraps that are discarded in a landfill can remain there for decades without breaking down. The same items can be turned into soilenriching compost in just a few weeks, as shown in **Figure 23**. Many communities distribute compost bins to encourage residents to recycle fruit and vegetable scraps and yard waste.

Buy Recycled People have become so good at recycling that recyclable materials are piling up, just waiting to be put to use. You can help by reading labels when you shop and choosing products that contain recycled materials. What other ways of recycling natural resources can you think of?

Figure 23

Composting is a way of turning plant material you would otherwise throw away into rich garden soil. Dry leaves and weeds, grass clippings, vegetable trimmings, and nonmeat food scraps can be composted.

Section



Assessment

- 1. What is meant by the term reuse? How does it differ from recycling?
- List three materials that can be recycled. Describe one product that can be made from each recycled material you listed.
- Describe at least three actions you could take to reduce your use of natural resources.
- **4.** Describe how you could reuse three items people usually throw away.
- **5. Think Critically** Why is reusing something better than recycling it?

Skill Builder Activities

- **6. Making and Using Tables** Make a table of data on the number of aluminum cans thrown away in the United States: 22.7 billion in 1982; 35.0 billion in 1986; 33.0 billion in 1990; 38.8 billion in 1994; 44.6 billion in 1998. For more help, refer to the Science Skill Handbook.
- 7. Communicating Write a letter to a local newspaper suggesting ways to reuse or recycle an item or items that most people in your community currently throw away. For more help, refer to the Science Skill Handbook.