

Recycling

TRASH
VS.
RECYCLING



Level 1 (Grades 3-5)

A PLASTIC WORLD

Plastics are a very big recycling problem. They take up to 500 years to decompose (or rot away) when in a landfill. Because of multi-layered packaging of many of the things we buy and the many different types of plastics, separating the products is a very big job. Most commonly used plastic containers, such as beverage containers and milk jugs are made from a single type of plastic. This makes them easier to separate, sort, and recycle. The plastic industry has adopted a number category recycling code that helps make the sorting process more efficient.

One of today's most commonly used plastic container is the plastic beverage bottle. These bottles can be recycled into carpets, twine, rope, clothes, filters, belts, webbing for lawn furniture, sails, tire cords, strapping, scouring pads, fence posts, and, of course, more plastic bottles. Polyethylene terephthalate (PET), the type of plastic used to make drink bottles, is labeled with a number "1" inside the chasing arrows of a recycling symbol. PET can also be used for automobile bumpers, freezer insulation, bathtubs, sinks, boat hulls, awnings, fiberfill for cushions, pillows, and insulated outerwear.

Five two-liter bottles can produce enough fiberfill to line an adult's ski jacket; 36 bottles can fill a sleeping bag. About 250 million pounds of fiberfill is used per year. Recycled fiber costs about half as much as non-recycled fiber.

Another commonly used plastic is high density polyethylene (HDPE) and is used to make milk jugs, most detergent bottles and shampoo and conditioner bottles. These containers are marked with the chasing arrows with a number "2" inside. These containers are used to make plastic lumber, flowerpots, drainage pipe, trash cans, traffic barrier cones, signs, playground equipment, and recycling bins.

Some of the other types of plastics are more difficult to recycle. Vinyl, low density polyethylene, polypropylene, polystyrene and other layered plastics are more difficult to recycle because they are a combination of different types of plastics or because the recycling process needs refining. These containers are marked with the recycling industry's chasing arrows and the numbers 3 through 7 inside the arrows. The lower the number, the easier the product is to recycle. There are about 50 different types of plastics.

Plastics are recycled by shredding the containers into little flakes. The flakes are cleaned, dried remelted, and formed into pellets to be used again.

To be recycled the plastic container should be rinsed and the lids removed. The lids are not recyclable in the same process as the bottle. The lids should be discarded. Labels do not have to be removed.

Manufacturing bottled water uses over 1.5 million barrels of oil per year. In one year, that's enough oil to fuel 100,000 cars.

The estimated life expectancy of plastic or composite (combination of recycled plastic and wood scraps) is 50 years.

If everyone in New York City would give up water bottles for one week they would save 24 million bottles from going into the landfill.

STEEL

Steel is one of the most recycled materials. The steel industry recycled more than 100 billion pounds of scrap every year, most coming from old cars, farm equipment, and major appliances. An additional two billion pounds of scrap are exported to foreign steel manufacturers.

Steel is usually prepared for recycling through magnetic separation. Many independent separation facilities, drop-off centers, resource recovery operations, waste-to-energy plants, incinerators, and landfills are equipped with magnetic separators. Once this material is located, it is crushed and baled for delivery to the detinner or mill.

Most of today's steel products are made from recycled materials. Recycled steel has several benefits for the environment. Every ton of steel recycled saves 2,500 pounds of iron ore, 1,000 pounds of coal, and 40 pounds of limestone. For every pound of steel recycled, 5,450 BTU of energy are saved. This saved energy is enough to light a 60-watt light bulb for more than 26 hours. Steel can be recycled into bi-metal foods cans, toys, decorative items, automotive and airplane parts, and building materials.

The most commonly used metal product to consumers is the bi-metal cans found in the supermarket. Cans have been produced for about 200 years. The first cans were made by hand from steel. At that time, they were used to preserve food so that it could be shipped to all parts of the world without spoiling. The American Gold Rush of 1849 created an urgent need for food in cans because settlers needed food that could be preserved during long trips to the western part of the United States. During the Civil War, metal cans filled with wholesome foods were served to soldiers on the battlefronts. Carbonated beverages were put in steel cans in 1953, when technology was advanced enough to prevent fizzy drinks from exploding under pressure, leaking, or corroding the metal can. Steel cans are 100% recyclable including the lids. The cans should be rinsed, however the labels do not have to be removed. The labels will get burned off in the recycling process.

ALUMINUM

Aluminum beverage cans are one of recycling's greatest success stories. Aluminum beverage cans were introduced in 1965. Aluminum was considered a better material for cans because it was lighter, chilled quickly, kept beverages fresh, used less material and didn't rust. It was also easier to print a label directly on the aluminum can instead of pasting paper labels on them. Aluminum is one of the most popular products consumers recycle, mainly because there are many local markets and those markets pay directly to the consumer. Approximately 133 billion aluminum cans are produced each year in the United States. Many individuals and charitable organizations raise funds by collecting and selling used aluminum products. Since aluminum recycling began in 1970, aluminum is 100% recyclable. The most efficient way to prepare aluminum cans to be recycled is to rinse the cans, flatten them, and place them in a box or biodegradable garbage bag for convenient storage. About 27 cans make up one pound. A large garbage bag with unflattened cans weighs about seven pounds; the same bag with flattened cans weighs about 18 pounds.

Used foil, non-microwavable "heat and serve" trays, and pie plates should not be recycled with aluminum cans. These products should be added to the metal recycling.

Scrap metal dealers often buy aluminum storm door frames, lawn chair frames, swing sets, window frames, downspouts, gutters, automotive parts, and other items. If you are selling your aluminum directly to a dealer, ask how they want it prepared before you deliver it to them.

Aluminum is an example of "closed-loop" recycling. That means a product is recycled and used again in the same form. Closed-loop recycling saves energy and conserved nonrenewable resources. The production of a recycled aluminum can uses 95% less energy than it takes to produce a new one. The recycling of one aluminum can saves enough energy to light a 100-watt light bulb for 3.5 hours and the energy equivalent of one cup of gasoline.

Aluminum cans are the most commonly manufactured items on earth, yet their design and construction is surprisingly complex. Each can consists of two different aluminum alloys. Despite this, the cans are easily recyclable. Cans are flattened and baled at the collection center for shipment to smelters for processing. The smelters shred or grind the aluminum into small chips, which are then melted and poured into ingots. The ingots are sent to manufacturing plants, where they are rolled into sheets to be made back into cans.

The estimated time it takes to recycle a can and return it to the grocer's shelves is only 120 days.

GLASS

The glass used in containers today is recyclable. Every American uses about 85 pounds of glass containers each year and most of them are discarded after use. Glass never decomposes. Glass recycling plants in the United States use about 30 percent recycled glass. However, in Europe 100 percent of the glass comes from recycled materials.

Most kinds of glass containers, heavy or light, whole or broken, are acceptable for recycling. Glass can be used and reused an indefinite number of times without a loss of quality.

To prepare glass for recycling, you must be able to identify the types of glass which are recyclable. These types are non-returnable juice bottles, ketchup bottles, wine and liquor bottles, and food containers. The types of glass that cannot be recycled are plate glass, window glass, mirrors, heat-resistant glass, light bulbs, lead-based glass like crystal or TV tubes, ceramics, automotive glass, milk-white glass, and household drinking glasses. Although these items are technically recyclable, the chemical make-up is different from what is used in bottles and jars and may contaminate the glass needed to produce new containers. Before being put in recycling containers, glass jars should be rinsed. Lids and labels do not have to be removed.

When recycled, the glass is broken into pieces called cullet. The cullet is run through a device which removed the lids and metal rings. A vacuum process removes the plastic and paper labels. When the glass is clean the cullet is added to raw materials and melted down with them. Most bottles and jars contain at least 25% recycled glass. This batch mix melts at 2,600 degrees Fahrenheit. The re-hot molten mass is then moved into a forming machine, where it is pressed into a new container. These containers are cooled, inspected and shipped to the customer. The process is extremely efficient, producing virtually no waste or unwanted byproducts. Glass recycling reduces air pollution by 20% and water pollution by 50% over glass made from virgin materials.

Glass can also be crushed and reused as a substitute for sand in construction projects. Crushed glass has been used in concrete projects, backfill for septic systems and culverts, daily cover for landfills, and ice-melt on snow-covered roads.

Glass can be used and reused to make new containers without a loss in quality, but if thrown away it will litter the Earth forever because it never decomposes.

PAPER

There are several types of products that are included in the category of paper recycling. We usually think of recycling newspaper, but we can also recycle office paper, magazines, books, construction paper, paperboard (light cardboard like cereal boxes), paper bags, and cardboard. Newspaper is usually recycled into more newspaper, however it can be made into paperboard, construction paper, insulation, egg cartons, animal bedding, cat litter, and mulch. Office paper may be made into more office paper or tissue. Cardboard and magazines are usually made into more cardboard.

Laminated paper or other plastic-covered paper products (like juice cartons) cannot be recycled yet.

Although paper recycling is technical in nature and requires many steps, the basic method is a very simple process to understand. Paper is mixed with liquid. The result is a pulp. The liquid is squeezed out of the pulp and the pulp is run through a press. When the pulp dries a new paper is created.

Each American uses nearly 43 pounds of office paper per year. Over four million tons are recycled each year. Extensive use of online systems and e-mailing will reduce the amount of office paper available for recycling. From 2001 to 2007 office paper generation has declined by 750,000 tons mainly because of the increased use of personal computers.

TRASH

Americans create about 4.6 pounds of trash per person each day. Of that amount, only 1.12 pounds is recycled.

The most recycled items by weight include corrugated boxes, newspapers, office paper and glass bottles. Lead-acid batteries, newspapers, corrugated boxes, and white goods (appliances) have the highest recycling rates.

Most of the space in landfills is taken up by clothing and food waste.

RECYCLING IN JACKSON COUNTY

Humans depend on the environment for their survival and can affect the environment negatively or positively. Humans consume products and affect how many resources are available for their use. The result of those products is waste. Those waste products can be handled in one of only a few ways; it can be sent to a landfill, burned in an incinerator, or recycled. While each one of these solutions has its own advantages and disadvantages, we will focus on recycling in this project.

The easiest way to reduce the amount of trash sent to landfills is not to create it in the first place. Attention to what we buy and how much trash we generate is the easiest way to save natural resources and preserve landfill space. The next step is to recycle any items that are accepted in local recycling programs.

What can be recycled varies from community to community because of facilities or lack of facilities nearby that can process various types of recyclable materials.

Most people think of plastics, metal, and paper when they recycle, however there are other items that can be recycled through special programs. Eye glasses, cell phones, batteries, hazardous household wastes, oil, mercury-containing items, ink jet cartridges, toner, pharmaceuticals, tires, appliances and even clothes can be recycled through special programs.

Some communities have curbside recycling programs sponsored by their local town and cities. These programs provide recycling pick up at the front of their homes on specific days. Other residents can deliver their recycling to collection centers.

Contact the Jackson County Solid Waste Management District (358-4277) to find the recycling opportunities in your neighborhood.

Preparing recyclable items:

- **Cardboard** and paperboard (light cardboard like cereal boxes) should be folded flat. Pizza boxes or other containers that contain food residue should not be included in recycling. Wax covered boxes such as juice cartons can not be recycled.
- **Office paper**, newspaper, magazines, file folders, unsolicited (junk) mail and construction paper can be recycled. Laminated or plastic coated paper can not be recycled.

- **Plastic** bottles should be rinsed. Lids are not recyclable and should be discarded. Labels do not have to be removed. Containers that held motor oil, meat packaging, food wrap, and most product packaging can not be recycled.
- **Metal food cans** should be rinsed. Labels do not have to be removed. Lids from food cans are recyclable.
- **Aluminum** cans and bottles should be rinsed.
- **Glass** jars should be rinsed and lids removed. Labels do not have to be removed. Window glass and ceramic glass are not recyclable. Not all programs in Jackson County accept glass. Check the requirements for your program.

Please do not add trash or any container with food residue to your recycling. These types of containers contaminate the recycling stream and ruin everyone's effort to recycle.

WHAT WE CAN DO

Recycling is not the answer to all our environmental problems, but it is a start. Recycling can become a part of everyday life, at work, school, and home. As time goes by, we will be able to recycle more and throw away less. Each individual contribution will make a difference to saving our natural resources and preserving landfill space.

RECYCLING REQUIREMENTS

Note: All Levels - Choose one. Exhibit topics cannot be repeated. Posters should follow requirements for posters as defined in this requirement book under the miscellaneous section. Reports should be a maximum of two pages.

Reports can be either hand written in ink or typed, however, the work must be that of the 4-H'er. For information about action demonstrations, please see your adult leader or a Junior Leader. Complete a record sheet.

Grades 3-5 (Choose one. With the exception of #1, exhibit topics cannot be repeated.)

1. Make a useful or decorative object from items normally thrown away. Exhibit should not exceed 2' X 2' X 2' and must include a written explanation of the article, what was used to make it and how it will be used. It should also include a list of involved costs. The project should be age appropriate.
2. A poster, report or power point on one of the following topics:
 - A. Identifying and preparing recyclables
 - B. The seven recycling codes
 - C. The 3'Rs
3. Design a poster to promote recycling.
4. Action Demonstration