

Recycling

Recycling helps create the products we use every day—from beverage containers to writing paper, carpet, and automobiles. Recycling recovers valuable materials out of the waste stream to make new products. That's what makes it one of the oldest environmental practices and one of the most beneficial.

Benefits of Recycling

According to the U.S. EPA, recycling:

- Conserves natural resources to help sustain the environment.
- Reduces the need for landfilling and incineration.
- Saves energy and prevents pollution caused by the extraction and processing of virgin materials.
- Decreases emissions of greenhouse gases.
- Expands U.S. manufacturing jobs and increases U.S. competitiveness.

Recycling Today

American communities currently recycled and composted just over 33.8% of municipal solid waste, diverting 82 million tons to recovery out of 243 million tons of trash generated. While nearly three-quarters of Americans have access to curbside programs and 92% have access to “some sort of recycling,” the national participation rate in recycling programs averages 50%. Keep America Beautiful estimates that only about 12% of public spaces may have recycling receptacles according to research completed in 2009.

The challenges and drivers of recycling revolve around issues such as citizen access to recycling programs, participation rates and incentives, and fluctuations in the global recycled commodity markets.

The Recycling Loop

According to the EPA, the recycling process involves 3 main steps, which form a loop. They are (1) collection and processing, (2) manufacturing, and (3) buying recycled products. The loop ensures the overall success and value of recycling.

Collection and Processing – Recycling collection varies from community to community but primarily



the collections methods are curbside, drop-off centers, buy-back centers, and deposit/refund programs. The system works when individuals take ownership and place items in the bin for recycling. If the individual doesn't make the choice to recycle versus dispose of, the cycle doesn't work. After collection, recyclables go to a materials recovery facility (MRF) to be sorted and prepared into marketable commodities. Recycled materials are like any commodity, so prices for the materials change and fluctuate with global market demand and quality of the raw materials.

Manufacturing – The second part of the recycling loop is when materials are turned into new products. Today, more and more products are being manufactured with total or partial recycled content. Many of these will become the same product in what is known as closed-loop recycling. For example, glass, aluminum, and steel can all be used to make new bottles and cans and cardboard can be used to make new boxes. Recycled plastics may be turned into new bottles or used to make carpeting and park benches, as well as fibers for clothing. Another innovative application includes recovered glass being used in roadway asphalt (glassphalt).

Buying Recycled Products – The third part of recycling loop is the purchase of recycled products. Government, business and individual consumers

play an important role by “buying recycled.” According to EPA, “As consumers demand more environmentally sound products, manufacturers will continue to meet that demand by producing high-quality recycled products.”

Identifying Recycled-Content Products

Product labels can be confusing to consumers interested in buying recycled because of the different recycling terminology used. The following definitions from the Federal Trade Commission’s “Guides for the Use of Environmental Marketing Claims” may help clarify the terms.

Recycled-content products are made from materials that would otherwise have been discarded. Items in this category are made totally or partially from material destined for disposal or recovered from industrial activities—like aluminum soda cans or newspaper. Recycled-content products also can be items that are rebuilt or remanufactured from used products such as toner cartridges or computers.

Postconsumer content refers to material from products that were used by consumers or businesses and would otherwise be discarded as waste. If a product is labeled “recycled content,” the rest of the product material might have come from excess or damaged items generated during normal manufacturing processes—not collected through a local recycling program.

Recyclable products can be collected and re-manufactured into new products after they’ve been used. These products do not necessarily contain recycled materials and only benefit the environment if people recycle them after use. Check with your local recycling program to determine which items are recyclable in your community.

What Gets Recycled?

What is accepted for recycling in each community is usually based on recycling markets and processing technologies. The recent “EPA Municipal Solid Waste Generation, Recycling, and Disposal in the United States” report states we recycled and composted 1.46 pounds of our individual waste generation of 4.34 pounds per person per day.

Aluminum

Aluminum has a long history of recycling. Recycling aluminum may save up to 95% of the energy needed to produce new aluminum from raw materials (mainly ore bauxite). Although aluminum is a nonrenewable resource, it can be recycled indefinitely. Recycled cans are melted into ingots weighing up to 60,000 pounds—enough aluminum to make 1.6 million new cans. It takes 60 days for a can to journey from the recycling bin through the recycling process and back to store shelves.

Besides cans, other types of aluminum, such as siding, gutters, car components, storm window frames and lawn furniture can also be recycled. Learn more online at the Can Manufacturers Institute (www.cancentral.com) and the Aluminum Association (www.aluminum.org).

Electronic Waste

Electronic waste, or e-waste, includes such items as computers, phones, and TVs. While recycling of these discarded products is growing, e-waste is being generated at a much faster rate than other municipal wastes. For comprehensive national information on donating and recycling electronics, visit the U.S. EPA’s Plug-In To e-cycling program at www.usepa.gov.

- *Wireless Phones* - Cell or smart phones or PDAs can be recycled through community collection programs or retailer return programs, or donated to charity. Recycling phones saves energy and keeps usable materials out of the landfill. These products are made of precious metals, copper, plastics—some of which require energy to mine or manufacture. Recycling allows these materials to be recovered and turned in to new products. For more information visit CTIA – The Wireless Association at www.recyclewirelessphones.com.
- *Computers* - Donating a working computer for reuse benefits communities, helps use valuable materials wisely, and keeps working PCs out of the trash. Computers can also be recycled through most state and local computer collection programs. Many computer manufacturers and retailers have a recycling take-back program. Obsolete computers are potentially a valuable source for secondary raw materials, such as lead, copper, and gold. They also contain hazardous substances, so it’s best to donate a computer for reuse or ensure that it is recycled properly.
- *Televisions* - As more households upgrade technologies—transitioning from analog to digital technology and from boxy, cathode ray tube (CRT) to flat panel televisions—more old TVs

will need to be safely recycled. Old televisions contain lead, copper, steel and aluminum that can be recovered through recycling. Recycling TVs helps to conserve natural resources and energy, as well as keeping potentially hazardous wastes out of the environment. Some retailers will accept televisions for recycling. If it's still working, donate for reuse.

Glass

Glass container manufacturers use up to 70% cullet, or crushed glass, combined with soda ash, limestone and sand, to make new glass containers. Glass bottles can be recycled endlessly with no loss in quality or purity. Using recycled glass to make new glass bottles and jars reduces consumption of raw materials, extends the life of plant equipment, such as furnaces, and saves energy.

Today most glass is collected mixed, but eventually the glass must be sorted by color (clear, green, and amber), or it has limited value to container manufacturers. After being processed at a materials recovery facility, most glass then goes to a cullet processor for further cleaning and sorting to prepare the cullet to be "furnace ready".

Like all recycled commodities, quality of glass cullet is important to its recyclability. Glass contaminants include ceramic cups and plates, clay pots, drinking glasses, light bulbs, and mirror and window glass. Recycled glass that does not meet specifications for use in making new bottles can be used for fiber-glass, countertops and flooring, landscaping, road bed, abrasives, filtration, and as a blasting media. For more information, visit the Glass Packaging Institute www.gpi.org.

Paper

There are many different types of recyclable paper, called grades. While paper fibers cannot be recycled forever, paper is made from a renewable resource, trees. Today, paper is made from trees mostly grown in crop forests and from recovered paper. When paper is recycled, paper mills will use it to make new newspapers, notebook paper, paper grocery bags, corrugated boxes, envelopes, magazines, cartons, and other paper products.

Besides using recovered paper and pulp from trees to make paper, paper mills may also use wood chips and sawdust left over from lumber operations (whose products are originally used to make houses, furniture, and other things). New paper products in the U.S. today are coming more and more from recycled sources.

Office paper recovered for recycling becomes raw material for paperboard, tissue, and printing and writing papers. Most recycled corrugated

boxes are made into new boxes. The rest is used for paperboard packaging, like food packaging boxes. Newspapers recovered for recycling are mostly going back into making more newsprint, and the remainder used for paperboard, tissue, and insulation, or exported. Find out more at www.paperrecycles.org.

Plastics

Most plastic products are derived from petroleum hydrocarbons. There are several different types of plastics, but the most widely used and recycled are "PET" (polyethylene terephthalate), or #1 plastic, and "HDPE" (high-density polyethylene), #2 plastic. PET plastic is mostly soft drink and water bottles. HDPE plastic includes bottles/jugs for milk, juice, water, and laundry products.

More than 95% of all plastic bottles are either PET or HDPE. The remaining 5% are various types of plastic that can be difficult to recycle in all communities because of limited markets. In some communities, plastic bags and product wrap, called "film" plastic, can be recycled at collection programs offered through national grocery and retail chains.

Some recycled PET is being used as a raw material for new plastic bottles. The rest is used to create second-generation products like fiber, tote bags, clothing, film, food and beverage containers, carpet, strapping, fleece wear, and luggage. HDPE plastic is often recycled into bottles for liquid laundry detergent, shampoo, conditioner and motor oil, as well as used to make recycling bins, benches, and plastic lumber. Learn more at www.americanchemistry.com/plastics, www.napcor.org and <http://www.plasticsrecycling.org/>.

Scrap Tires

Environmentally sound and economically viable markets for scrap tires recovered for recycling are tire-derived fuel, civil engineering, and ground rubber applications. Tire-derived fuel markets account for most of the scrap tires generated. Ground rubber applications include new rubber products, playground and other sports surfacing, and rubber-modified asphalt. Tires recovered and used in civil engineering projects include things such as tire shreds used in road and landfill construction. Ensure proper handling of scrap tires as stockpiles can create the potential for fire, as well as conditions for mosquito propagation. Find out more from the Rubber Manufacturers Association www.rma.org.

Steel

Scrap steel has become the steel industry's single largest source of raw material because it is economically advantageous to recycle old steel into new steel. In light of this, steelmaking furnaces have been

designed to consume steel scrap. The steel industry uses scrap steel from recycled cans, automobiles, appliances, construction material, and other steel products. Recovered steel can be melted and used again and again to produce new steel products.

Recycling steel helps save landfill space and provides a valuable resource to the steel industry.

It also preserves natural resources and energy. For every ton of steel recycled, 2500 pounds of iron ore, 1400 pounds of coal and 120 pounds of limestone are conserved. And in a year, the steel industry conserves the equivalent energy to power about 18 million homes for 12 months. Learn more at the Steel Recycling Institute www.recycle-steel.org.

Resources

- U.S. Environmental Protection Agency, Office of Solid Waste – www.epa.gov/osw
- Curbside Value Partnership – www.recyclecurbside.org
- Earth911 – www.earth911.org
- Federal Trade Commission Sorting Out “Green” Advertising Claims and Guides for the Use of
- Environmental Marketing Claims - <http://www.ftc.gov>
- Aluminum - www.cancentral.com
- Aluminum - www.aluminum.org.
- Glass - www.gpi.org
- Paper - www.paperrecycles.org
- Phones - www.recyclewirelessphones.com
- Plastics - www.americanchemistry.com/plastics
- Plastics- www.napcor.org
- Plastics - <http://www.plasticsrecycling.org/>
- Rubber - www.rma.org.
- Steel - www.recycle-steel.org