WHAT CAN YOU SAVE TODAY?
S M T W T F S
RESOURCE CONSERVATION CHALLENGE

The Resource Conservation Challenge

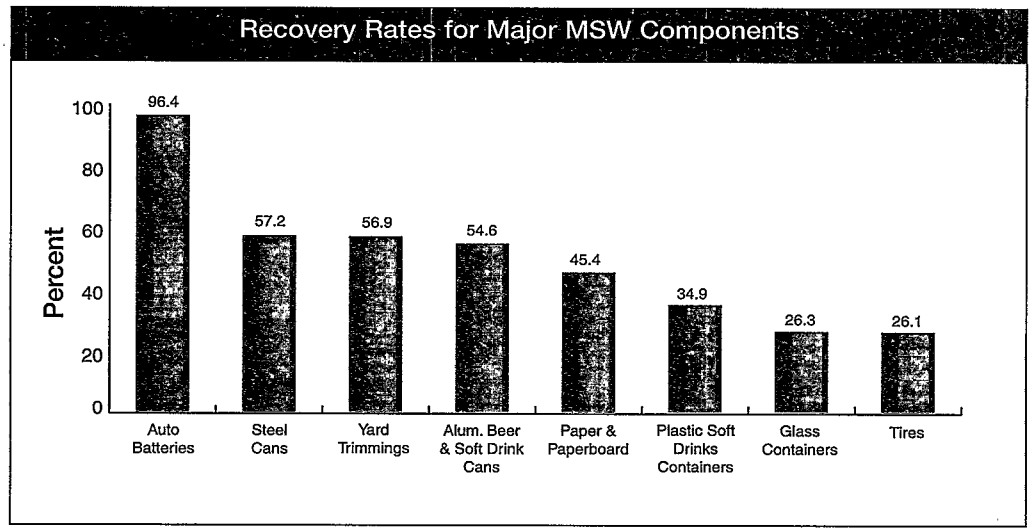
Making the Connection with Solid Waste Facts and Figures

The Environmental Protection Agency (EPA) is challenging everyone to rejoin the fight against waste. We want to help everyone see the connection between waste, resource and energy use, greenhouse gas emissions, and pollution, so that we will be motivated to recycle more and waste less. Our report, "Municipal Solid Waste in the United States: 2000 Facts and Figures" shows America's current disposal habits. You can see how our purchasing and manufacturing decisions are connected to the environment. By understanding those, we hope you will make smarter choices about products and purchases. When you do, the result will be less waste, more economic growth, tremendous energy savings, and more recycling. And, we will meet or beat our 35 percent national recycling goal by 2005.

Connect Waste Reduction to Energy Savings

The extraction and processing of raw materials into manufacturing feedstocks are some of the most energy-intensive activities of industry. Therefore, reducing or nearly eliminating the need for these processes helps achieve huge energy savings.

Manufacturing goods from recycled materials typically requires less energy than producing them from virgin materials. Recycling aluminum cans, for example, saves 95 percent of the energy required to make the same amount aluminum from its virgin

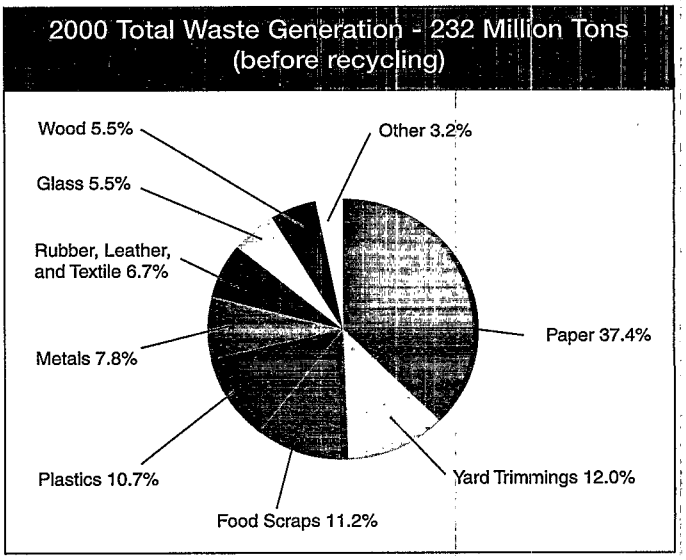


EPA United States Environmental Protection Agency

Printed on paper that contains at least 30 percent postconsumer fiber.

source, bauxite. The amount of energy saved differs by material, but almost all recycling processes achieve significant energy savings compared to production of virgin materials.

Waste prevention is even more effective at saving energy. When we reuse things or when manufacturers make products with less material, less energy is needed to extract, transport, and process raw materials and to manufacture products. When demand for energy decreases, fewer fossil fuels are burned and less carbon dioxide is emitted into the atmosphere.



Connect Waste Reduction to Climate Change

Waste prevention and recycling—jointly referred to as waste reduction—not only help us to better manage our waste, but they also are potent tools to reduce greenhouse gases. Together, waste prevention and recycling:

- Reduce emissions from incinerators. Recycling and waste prevention divert materials from incinerators, thus reducing greenhouse gas emissions from waste combustion.
- Reduce methane emissions from landfills. Waste prevention and recycling (including composting) divert organic wastes from landfills, reducing the methane released when waste decomposes.
- Increase carbon storage in trees. Trees absorb carbon dioxide from the atmosphere and store it in their wood. Waste prevention and recycling of paper products reduces the need for virgin wood, so more trees can continue to remove carbon dioxide from the atmosphere.

Connect the Benefits

To help measure the benefits of waste reduction, we conducted a comprehensive study of waste management trends in the United States. The study estimated the greenhouse gas emissions associated with managing 10 types of waste materials: office paper, newspaper, corrugated cardboard, aluminum, steel, plastic, food scraps, and yard trimmings. Management options analyzed in the study included waste prevention, recycling, composting, incineration, and landfilling.

More than 5,400 BTUs of energy are conserved for every pound of steel recycled. The steel industry's annual recycling saves the equivalent energy to electrically power about 18 million households for a year.

Our research indicates that, in terms of climate benefits, waste prevention—or source reduction—is generally the best management option. Source reduction, including material reuse, can help reduce waste disposal and handling costs, because it avoids the costs of recycling, municipal composting, landfilling, and combustion. Source reduction also helps to conserve natural resources; reduce the toxicity of the waste stream by encouraging less hazardous alternatives for certain items (such as cleaning products and pesticides); and reduce the costs associated with waste disposal and creating excess packaging.

Textiles

- Generation: An estimate 9.4 million tons of textiles were generated in 2000.
- Percent: Textiles made up 4 percent of the MSW stream in 2000.
- Recovery: About 13.5 percent of textiles in clothing and in items such as sheets and pillowcases was recovered from the MSW stream, mostly for reuse.

What Your Office Can Do:

By recycling all of its paper, plastic, and corrugated waste generated in a year, an office building of 7,000 workers could reduce greenhouse gas emissions by 1,200 metric tons of carbon equivalent, the basic unit for measuring greenhouse gases. This is equivalent to taking 900 cars off the road in one year.

Textiles in MSW are found mainly in discarded clothing, although other sources include furniture, carpets, tires, foot wear, and other nondurable goods like sheets and towels.

Tires

- Generation: Approximately 4.7 million tons of scrap rubber tires were generated in 2000.
- Percent: Tires made up about 2 percent of the MSW stream in 2000.
- Recovery: In 2000, nearly 26 percent of scrap tires was recycled, excluding retreads and tires combusted for energy.

In 1990, scrap tires were recycled at a rate of less than 10 percent. Now, more than twice that is recycled. Forty-eight states have regulated scrap tire management, up from a handful 10 years ago.

Wood

- Generation: A total of 12.7 million tons of wood were generated in MSW in 2000.
- Percent: Wood materials constituted 5.5 percent of the MSW stream in 2000.
- Recovery: Wood pallet recovery for recycling (usually by chipping for uses such as mulch or bedding material, and excluding wood combusted as fuel) was estimated at 480,000 tons in 2000.

The sources of wood in municipal solid waste include furniture; other durable goods, such as cabinets for electronic equipment; wood packaging, such as crates and pallets; and other miscellaneous products.

Yard Trimmings

- Generation: Approximately 27.7 million tons of yard trimmings (including grass, leaves, tree, and brush trimmings) were generated in 2000.
- Percent: Yard trimmings made up nearly 12 percent of the MSW stream in 2000.
- Recovery: In 2000, nearly 57 percent of yard trimmings was composted—almost double the amount recovered only 5 years earlier. Communities sponsored 3,800 yard trimming recovery programs in 2000.

Legislation banning the disposal of yard waste in landfills enacted in 23 states and the District of Columbia by 1997 has increased yard waste composting. Backyard composting and grasscycling also have increased. Generation and recovery numbers for yard waste do not include backyard compost or grass clippings left on the lawn.

- Recovery: In 2000, approximately 2.6 percent of food scraps was composted.

Food scraps included here consist of uneaten foods and food preparation waste from homes; commercial establishments, such as restaurants; institutional sources, such as school cafeterias; and industrial sources, such as factory lunchrooms.

Glass Containers

- Generation: Approximately 12.8 million tons of glass were generated in MSW in 2000. Food and beverage containers made up nearly 88 percent of this amount; the remainder came from products such as cookware and glassware, home furnishings, and plate glass.

Recycling one glass bottle saves enough electricity to light a 100-watt bulb for four hours.

- Percent: Glass constituted 5.5 percent of MSW generated in 2000, the same percentage as in 1999.
- Recovery: About 26 percent of all glass food and beverage containers was recycled in 2000. Glass had an overall recovery rate of 23 percent in 2000.

Most of the glass recovered in the United States is used to make new glass containers. A portion also is used in fiberglass insulation and "glassphalt" for highway construction.

Paper and Paperboard

- Generation: More than 86.7 million tons of paper and paperboard were generated in 2000.
- Percent: Paper and paperboard constitute the largest portion of MSW, representing 37.4 percent of MSW in 2000.
- Recovery: Paper and paperboard had an overall recycling rate of 45.4 percent in 2000. About 70.7 percent of corrugated boxes, 58.2 percent of newspapers, 19.3 percent of books, 31.9 percent of magazines, and 54.1 percent of office paper were recycled in 2000.

Recycling one ton of paper saves 17 trees, 6,953 gallons of water, and 4,077 kilowatt hours of energy.

Paper production is sensitive to economic conditions—paper generation declines in recession years. Two examples demonstrate why this is the case: During a recession, manufacturers use less corrugated paperboard to ship products as demand tends to be lower, and newspapers use less paper as they have fewer advertisement pages.

Plastics

- Generation: Approximately 24.7 million tons of plastic waste were generated in 2000.
- Percent: Plastics comprised 10.7 percent of the total MSW stream in 2000.
- Recovery: Recovery of plastic containers and packaging was 9.2 percent in 2000, with PET soft drink bottles being recycled at a rate of 34.9 percent and HDPE milk and water bottles at a rate of 30.4 percent. Overall recovery of all plastics in MSW occurs at a rate of 5.4 percent.

One passenger tire contains the energy value of 7 gallons of oil.

Plastics are a rapidly growing segment of the MSW stream. Plastic generation increased ten-fold from 1960 to 2000. Plastics are used to make a variety of durable and nondurable goods, from appliances and furniture to disposable diapers and trash bags, as well as a range of container and packaging products.

Recycling is the next best approach. Using information from our research, community and other solid waste managers can analyze the potential of source reduction and recycling to reduce greenhouse gas emissions. They can make the analysis from characteristics of their community's waste stream and the management options available to them.

Annually, enough energy is saved by recycling steel to supply the city of Los Angeles with electricity for almost 10 years.

Summary of Generation and Recovery Rates for Major Materials

Aluminum

- Generation: A total of 3.2 million tons of discarded aluminum were generated in 2000. Much of this was aluminum containers and packaging, such as soft drink and beer cans, which contributed nearly 2 million tons to the total.
- Percent: Aluminum made up 1.4 percent of total MSW generated in 2000.
- Recovery: Approximately 54.6 percent of aluminum beverage containers were recycled in 2000. The overall recycling rate for aluminum packaging, which also includes foils and other aluminum closures, was 44.6 percent.

The energy saved from recycling one aluminum can could operate a computer for three hours.

Historically, aluminum cans have generated a large percentage of the revenues for many municipal recycling programs. Manufacturers make 99 percent of all beer cans and 97 percent of all soft drink cans from aluminum, and the average aluminum can contains 40 percent postconsumer recycled aluminum. Recovering aluminum for recycling also saves money and dramatically reduces energy consumption—the aluminum can recycling process saves 95 percent of the energy that is needed to extract bauxite ore to produce aluminum.

Ferrous Metals

- Generation: About 13.5 million tons of ferrous metals (e.g., iron and steel) were generated in MSW in 2000.
- Percent: Ferrous metals constituted 5.8 percent of the MSW stream in 2000.
- Recovery: Overall, about 34 percent of ferrous metals from durable goods was recycled in 2000. Approximately 57.2 percent of steel food cans and other steel cans was recycled.

Most ferrous metals in MSW are found in durable goods such as appliances, furniture, and tires. Steel packaging (cans and drums) are another major source of ferrous metals. Almost all steel products made in the United States contain some percentage of recovered steel.

Definition of Terms

Generation: Refers to the weight of materials and products as they enter the waste management stream before materials recovery, combustion, or landfilling takes place.

Recovery: Includes products and yard trimmings removed from the waste stream for the purpose of recycling, including composting.

Food Scraps

- Generation: Nearly 26 million tons of food scraps were generated in 2000.
- Percent: Food scraps comprised approximately 11.2 percent of the MSW stream in 2000.

For More Information

More information on "Municipal Solid Waste in the United States: 2000 Facts and Figures" is available at www.epa.gov/epaoswer/osw/conserve/index.htm.
We also would like your suggestions on how we can meet the national reduction goal. Email us at oswchallenge @epa.gov or write to:

U.S. EPA
1200 Pennsylvania Avenue, NW (5305W)
Washington, DC 20460
Attn: RCC

You can also obtain information by calling the RCRA Call Center at 703 412-9810 or TDD 703 412-3323 (hearing impaired) if you are live within the Washington Metropolitan area. Call 800 424-9346 or TDD 800 553-7672, if you are a long-distance caller.

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Solid Waste and Emergency Response
(5305W)
EPA530-F-02-034