

Curbside Recycling - A Step Towards Sustainability

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The concept of recycling has been around for thousands of years. Historically, recycling has always been implemented as a way to reuse materials that were no longer needed or suitable for their initial purpose or use. Native Americans were steadfast recyclers throughout their long tribal histories. Leather from old worn-out fur coats was often transformed into a pair of warm moccasins. Broken ceramics were often turned into tools or weapons for hunting. These people recycled because it was the best way to utilize the resources they had to the fullest extent. They never experienced modern forms of pollution, and they certainly never had to pay for the disposal of waste. People recycled because it seemed like the only reasonable thing to do. It saved time, energy and resources, along with promoting a self-sustainable way of living, at that time the only means for efficient survival.

Modern civilizations have become increasingly dependent on packaged materials. In fact, packaging represents about 65% of all household trash.¹ This is partially due to the fact that most of us do not partake in a self-sustaining lifestyle. Most of us buy everything we need to live, and our purchases are packaged and shipped to us from all parts of the world. The ability to mass produce cheap lightweight materials such as paper, plastic and aluminum has turned the United States into a “throw away” society where wasteful packaging is all too common, while more and more items are being marketed as disposable.

In 1970, with the first celebration of Earth Day, the United States was formally introduced to the idea of recycling, as we know it today.² However, it took until the mid eighty’s for the idea of curbside recycling as a service similar to garbage collection to really catch on. In fact, some credit the modern recycling movement in the US as having begun in 1987, when a barge containing over 3,000 tons of trash departed from New York to deposit its load of garbage in Morehead City, North Carolina. Before it reached its destination, rumors that it contained medical waste caused officials in Morehead City

¹ <http://members.aol.com/Ramola15/funfacts.html>

² Kimball, Debi “Recycling In America”

to deny the vessel permission to unload its garbage. As a result, the barge traveled down the East coast of the United States searching for a place to get rid of its load, eventually being turned away in places as far as Mexico and Belize. The barge finally returned to New York, where the trash was incinerated after a short legal battle.³ The barge's journey became a small media event in 1987, and in turn led Americans to believe that we were running out of landfill space. A small number of citywide recycling programs had existed before the barge fiasco, but for the most part there was no national effort to promote recycling. Twenty years ago, only one curbside recycling program existed in the United States, collecting several materials at the curb. By 1998, 9,000 curbside programs were in full swing across the nation. As of 1999, 480 materials recovery facilities had been established to process collected materials.⁴ Figure 1 shows nation-wide municipal solid waste recycling rates from 1960 to 2003 according to the EPA.

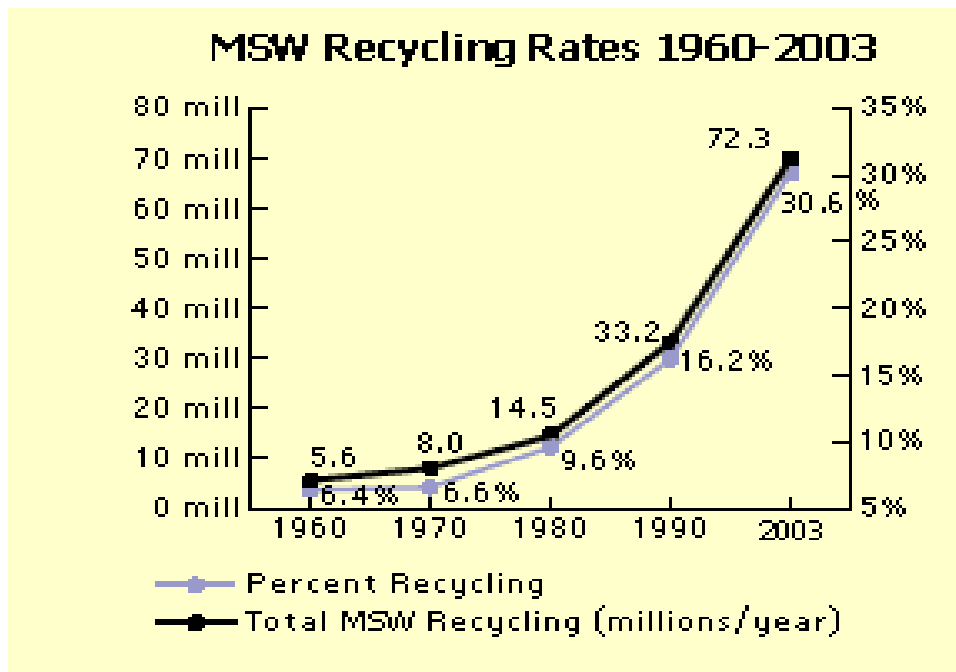


Figure 1, <http://www.epa.gov>

Today, curbside recycling has become mainstream in part because local governments promote it as a way to reduce the trash that goes into their crowded

³ <http://en.wikipedia.org/wiki/Recycling#History>

⁴ <http://www.epa.gov>

landfills. However, Philadelphia still remains far behind most of the country in its effort to increase recycling. In 2004, the City of Philadelphia spent approximately \$40 million in landfill fees for about 750,000 tons of garbage, and landfill fees are expected to rise by about \$10 per ton in the coming year.⁵ Residents recycled only 45,000 tons of trash last year for a "diversion rate" of 6 percent, while on the opposite end of the spectrum; the city of San Francisco achieved an astounding diversion rate of 67 percent in that same year. If Philadelphia could just double its rate to 12 percent it would save the municipality more than \$2.4 million per year.⁶ The EPA has recently set forth a national goal to recycle 35 percent of all municipal solid waste. Figure 2 shows the typical composition of waste at a dumpsite. All but ten percent of the waste items found can be easily recycled.

Compositon Of An Average Dump

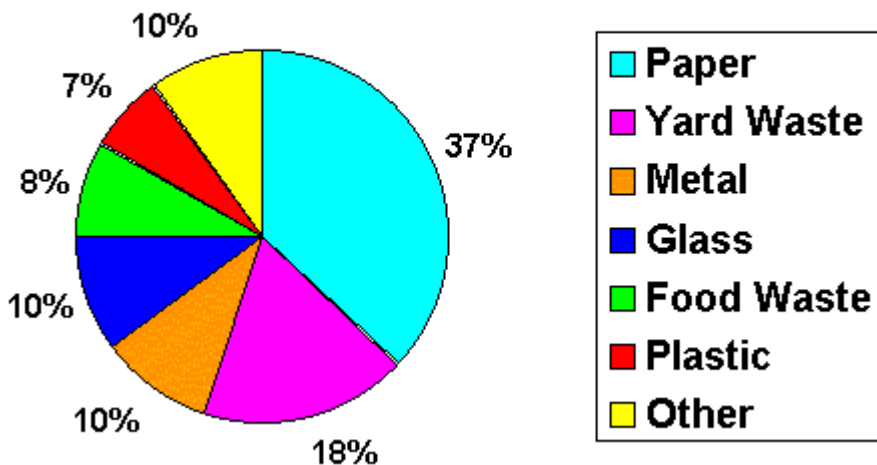


Figure 2, <http://www.epa.gov>

Apart from saving money on landfill fees, recycling leads to decreased utilization of raw materials, reducing the amount of energy required to manufacture new products. The normal life of an aluminum beverage can starts at the mine where ore for the can is extracted. The next step is the isolation of the aluminum within the ore; then electrolysis

⁵ <http://www.bluemountainrecycling.com/>

⁶ <http://www.phila.gov/streets/recycling.html>

is performed to ensure the formation of pure aluminum.⁷ Once the aluminum is intact, it is shaped into its can form, filled, shipped out to distributors, after which it finally reaches the general public. When we recycle this can, we are essentially skipping over the two steps involved in the can's creation, which require the most energy. Mining the ore and performing the electrolysis for aluminum production consumes an enormous amount of resources. Recycling one can saves the equivalent energy of one half of a gallon of gasoline, or enough energy to run a TV for three hours.⁸ There is no limit to the amount of times an aluminum can could be recycled. All of the aluminum is retained in the recycling process, and due to recycling, aluminum cans account for less than 1% of the total U.S. waste stream, according to EPA estimates.⁹ Regarding paper, each ton (2000 pounds) of recycled paper can save 17 trees, 380 gallons of oil, three cubic yards of landfill space, 4000 kilowatts of energy, and 7000 gallons of water. This represents a 64% energy savings, a 58% water savings, and 60 pounds less air pollution.¹⁰ For glass, the energy saved in recycling one glass bottle can run a 100-watt light bulb for four hours. This results in 20% less air pollution and 50% less water pollution than when a new bottle is made from raw materials.⁹ Figure 3 shows recycling rates for commonly recycled materials.

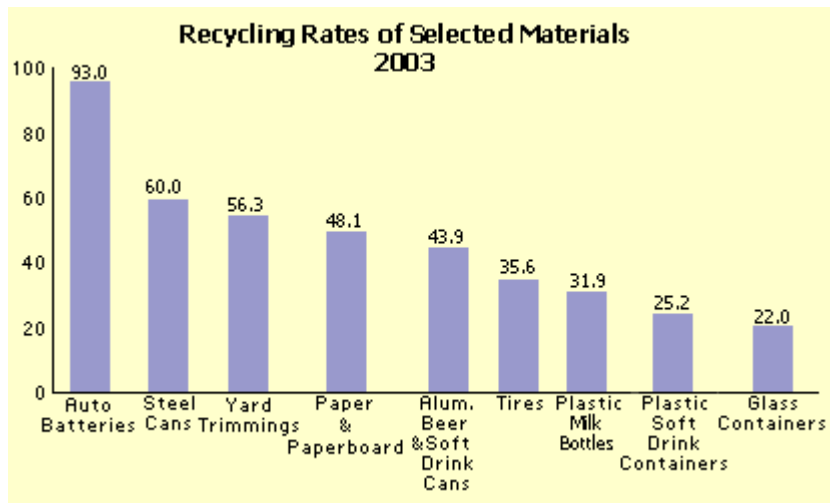


Figure 3, <http://www.epa.gov>

⁷ <http://www.webelements.com>

⁸ <http://members.aol.com/Ramola15/funfacts.html>

⁹ <http://www.epa.gov>

¹⁰ <http://members.aol.com>

Curbside recycling is a simple practice and easy to participate in, and is law in many municipalities across the nation. Collecting and processing waste materials, manufacturing products made from recycled material, and then purchasing recycled products creates a loop that ensures the overall success and value of recycling. The process starts at home with the separation of recyclables from trash or items that are not recycled through a municipality's curbside program. Philadelphia is currently using a dual-stream recycling method, which accepts newspaper, glass, aluminum and steel containers, magazines, junk mail and phone books. In a dual-stream system, paper material is kept separate from other recyclables. Philadelphia has recently designated several test areas for a single-stream method already in use in many parts of the country.¹¹ The single-stream method allows for all non-organic recyclables to be set out in the same container, which are later sorted by machines at the recycling facility. Figure 4 shows a material sorting machine at Blue Mountain Recycling Center in Philadelphia.



Figure 4, <http://www.bluemountainrecycling.com>

Once the materials are cleaned and sorted, the recyclables next go through the second part of the recycling loop, which is to process or break down the sorted materials. Plastic bottles are washed and ground to pellet form. These pellets are melted and loomed into fiber for the formation of park benches, detergent bottles, carpeting, pedestrian bridges, plastic car parts, toys and more. Glass is often times ground down and used as a key part in applications such as roadway asphalt (glassphalt), filter medium, or reduced weight concrete mixes. More and more of today's products are being manufactured with

¹¹ <http://www.bluemountainrecycling.com>

total or partial recycled content. There are currently more than 4,500 recycled-content products available for purchase today.¹² Common household items that can be made with recycled materials include newspapers and paper towels; aluminum, plastic, and glass soft drink containers; and steel cans.

Purchasing recycled products is a necessary and equally important step in completing the recycling loop. By buying products made from recycled material we insure success in the recycling process. When we buy recycled products, we create an economic incentive for recyclable materials to be collected, manufactured, and marketed as new products, which inherently lowers the cost of recycling. As consumers continue to demand more environmentally sound products, manufacturers will continue to supply the public by producing high-quality recycled products. The images below depict symbols placed on recyclable materials and items which are made from recycled materials. The three sides of the triangle represent the three-step process of collection, manufacturing, and the actual purchase and use of the recycled product.



Recyclable material



Made with recycled material

With all the benefits that recycling has to offer, it's a wonder why recycling diversion rates are so low nation wide. Part of this is due to a lack of education. If children are taught early enough how to recycle, it will become just as automatic as throwing out garbage. Parents as well as schools need to teach kids not just how to recycle, but also why it is important to do so. Even with an estimated 375 percent increase nationally over the last decade, curbside recycling is currently only available to around half of the US population.¹³ Some people need a more tangible incentive to encourage recycling. Programs that pay people to recycle are now starting to sprout up in the Philadelphia area and across the country. Recycle Bank is a program that works in

¹² <http://www.epa.gov>

¹³ <http://www.ciwmb.ca.gov/Publications/LocalAsst/31002014.pdf>

conjunction with city municipalities, businesses and recycling centers to give credit to recyclers in the form of coupons. In this system, recycling containers are bar-coded so that the recycling truck can record the amount of material your home recycles.

Education, and incentives, along with a user-friendly single stream collection process, can all aid in making curbside recycling a common practice in today's society. As our resources become less abundant, and our landfills grow, recycling will become a necessity for the continued health and existence of modern society.