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PRINTtips

An Environmental Success Story ... Paper Recycling



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Paper recycling is more than just putting used paper in an appropriately-labeled recycling bin. Rather, it is an entire process that includes collecting, sorting, shipping, manufacturing, and purchasing the newly-made products in a repeatable cycle. Whether paper is made from trees, crops, agricultural residue, or other fibers, a recycling system is needed to promote environmental sustainability.

A surprisingly large number of products can be made from recycled materials: fine writing and printing papers; newspapers and magazines; household paper products like paper towels, napkins, facial and toilet tissue; office products like copy paper, file folders, envelopes, and adding machine tape; packaging products like cereal packages, egg cartons, gift boxes, and cardboard boxes; game boards; animal bedding; and insulation.

History of Paper Recycling

Recycling for paper is not new. In the United States, it has been going on since 1690, when paper was made from rags rather than wood pulp. In that year the first paper mill in the United States, the Rittenhouse Mill near Philadelphia, made paper from fiber derived from cotton and linen rags (often used clothing). To make the mill a success, William Rittenhouse teamed with William Bradford, the owner of a printing establishment, who had a monopoly on all the paper produced by the mill – 1200 reams a year.



During the Revolutionary War, Benjamin Franklin used scrap paper for his printing presses and Massachusetts required that all towns appoint an individual to receive rags for paper mills. In 1896 the first major recycling center was started by the Benedetto family in New York City. They collected rags, newspaper, and trash with a push cart.

During World War I, the federal government created the Waste Reclamation Service to encourage the public to save old rags and waste paper. Used paper became a valuable commodity to offset the shortage of paper pulp. Paper mills used old books, newspapers and business papers to make new paper fiber. In 1929, Sacramento, California began selling the city's waste paper to an independent paper company and with the revenue generated, increased the wages of its trash collectors by 25 cents a day.

An Environmental Success Story ... Paper Recycling (cont.)

“The United States is the world’s leading paper recycler, responsible for over one-third of all the paper recovered in the world.”

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“Between 1990 and 2010, paper recycling almost doubled (89% increase).”

By 1993, more paper was being recycled than thrown away – a turning point in paper industry production.

Paper Recycling Statistics

The United States is the world’s leading paper recycler, responsible for over one-third of all the paper recovered in the world. According to 2013 data from the annual American Forest & Paper Association (AF&PA) Fiber Survey published by Paper Recycles, in 2013, 55% of recovered paper stayed in the United States and 40% was exported to China and other overseas markets. The use of recycled paper by category is:

- Net overseas exports = 40%
- Containerboard (i.e. corrugated boxes) = 32%
- Boxboard (i.e., cereal packages) = 12%
- Tissue = 9%
- Newsprint = 2%
- Other = 5%

In the United States, papermaking materials come from three primary sources: recycled paper; trees and other plants; and wood chips and scraps from saw mills. Each source accounts for about one-third of the total materials. In 2008 there were 430 pulp and paper mills in 41 states (all but Alaska, Colorado, North Dakota, Nebraska, Nevada, Rhode Island, South Dakota, Utah and Wyoming). By 2010, 80% of these relied on recycled paper to contribute 37% of the material used to make new paper products.

Here Are Some Recycling Facts

- The largest single category of paper use in the United States is not for reading and writing. It is for packaging – 41% of all paper used.
- Between 1990 and 2010, paper recycling almost doubled (89% increase).
- Since 1993, more paper is recovered than is sent to landfills. In 2013, 50.1 million tons of paper was recovered and 19.9 tons went to landfill.

- In 2014, over 96% of Americans had access to curbside or drop-off paper recycling programs.
- By weight, more paper and paperboard packaging is recovered for recycling than all glass, plastic, metal, and other materials combined. Paper accounts for 74.6% of all recovered materials.
- In 2012 about 44 million tons of paper and paperboard were recovered, for a recycling rate of almost 65%.
- In 2013, almost 11 million tons of printing and writing paper were recovered for a recycling rate of 53%.
- In 2013, almost 70% of all newsprint was recovered for recycling. About one-third is recycled back into newsprint; the rest is made into other packaging products and animal bedding.
- In 2013, 88.5% of corrugated cardboard was recovered for recycling. 32% of the material recovered went to produce containerboard and 12% to produce boxboard. Most corrugated boxes have over 25% recycled fibers; some are 100% recycled.
- It costs 50% to 80% less to construct a paper mill that uses recycled materials instead of virgin materials.
- Producing paper using recycled materials takes 40% less energy than producing paper from virgin pulp.
- For every 15,000 tons of old newspaper recycled annually, 30 jobs are created to collect the paper and 40 jobs are created to process the paper.

And a final though unrelated fun recycling fact: an estimated 80 million Hershey’s kisses are wrapped each day. This uses enough aluminum foil to cover over 50 acres of space, or almost 40 football fields. All that foil can be recycled though not many people realize it.

Recycling Saves

Recycling conserves resources. It takes 40% less

An Environmental Success Story ... Paper Recycling (cont.)

energy and creates 74% less air pollution and 35% less water pollution to produce paper using recycled materials than virgin wood pulp. Using recycled paper saves 7000 gallons of water per ton of paper produced.

Paper can be recycled and used to make new paper many times. However, each time the recovered paper is reduced to pulp and reformatted into a new product, the paper fibers grow shorter. Eventually – after seven recycles – the paper fibers will no longer hold together. To combat this, paper mills use a mix of virgin and never-before-recycled paper materials to produce

pulp. Most recovered paper is recycled into a paper grade equal to or lower than the grade of the original paper.

We Use Paper Responsibly

At TechneGraphics, we support both recycling and responsible use of paper. We carry an inventory of popular papers so we can minimize how much surplus paper we accumulate. Finally, what surplus paper we do have we donate periodically to schools and non-profit organizations.

“Paper can be recycled and used to make new paper many times.”

Vocabulary of the Graphic Arts

Baler: piece of recycling equipment used to compress old corrugated cardboard containers into cubes.

Curbside recycling: a collection system that requires residents to place recyclables in a bin or container at their curbside for regularly scheduled pick-up.

Drop-off recycling: community recycling programs that require residents to separate and deliver recyclables to a designated site.

Dual-stream recycling: a curbside collection process in which residents separate paper products from all other recyclables.

Mixed paper: a category of recovered paper that typically includes old magazines, old newspapers, catalogs, direct mail, paper bags, and paperboard (cereal and other boxes).

Old corrugated containers (OCC): used corrugated (cardboard) containers that are typically recycled into shipping boxes.

Old magazines (OMG): used magazines that can be recycled into newsprint, tissue, writing paper, and/or paperboard.

Old newspapers (ONP): used newspapers that can be recycled into newsprint, recycled paperboard, tissue, and other paper grades.

Paper recovery: the collection of used paper products.

Recycling: the process of creating a new product from a used one.

Recovery rate: percentage of paper and paperboard consumed that gets recovered for recycling.

Recycling bin: containers used to collect recyclable materials in communities, workplaces, and schools.

Single-stream recycling: a curbside collection process that allows for all recyclables to be placed in one bin or cart with no separation.

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Paper Recycling Has 10 Steps

“Bleaching. For colored paper, hydrogen peroxide or oxygen is used to bleach dyes from the paper and increase the brightness.”

- **Step 1: Collection, Sorting, and Transportation.** Paper in recycling containers is collected and sorted into types or grades.
- **Step 2: Storage.** At the paper mill, the paper is bundled separately by grade and placed in warehouse storage.
- **Step 3: Repulping.** The pulper chops the paper to very small pieces while the chemicals break the paper down into strands of cellulose fibers.
- **Step 4: Screening.** After the paper pulp becomes mushy, it is forced through a screen to remove contaminants.
- **Step 5: Cleaning.** The screened pulp is placed in cone-shaped cylinders that spin the paper, further removing debris.
- **Step 6: De-inking.** Surfactants are applied to separate glue residue, adhesives, and printing ink from the pulp,
- **Step 7: Refining.** The contaminant- and ink-free pulp is beaten until the fibers swell, making them easier to work with in future steps.
- **Step 8: Bleaching.** For colored paper, hydrogen peroxide or oxygen is used to bleach dyes from the paper and increase the brightness.
- **Step 9: Papermaking.** The recycled pulp is mixed with 99.5% water and placed in a large metal box. Jets spray the pulp onto a flat wire screen.
- **Step 10: Drying.** Heated metal rollers are used to dry the paper, then the dry paper is rolled. A large roll may be cut into smaller rolls.