

The Paper Recycling Process Explained

Updated March 30, 2023

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This article is part of Rubicon's [Spring Greening series](#), where you can learn how to green up your cleanup this spring.

Paper and paper products exist in every facet of our lives.

Many of us start our days with the help of paper products—the packaging of our favorite breakfast cereal contains paperboard, as does the carton of milk we use along with it. If some of that milk spills, you can clean it right up with a paper towel.

Our kids write, draw, take notes, build crafts, and read from textbooks every day in school using paper products. Adults do the same (often minus the crafts and textbooks) in our offices and workplaces.

Even at the grocery store, we are often asked the perennial question: “Paper or plastic?” when it comes time to check out (of course, your answer to this should always be, “I brought my own!”).

We rely so heavily on the benefits of paper products, that we must be able to produce more of them in a sustainable fashion. Luckily, paper is one of the most widely recycled materials in the world.

Paper Recycling Facts

The United States produces a lot of paper waste. In 2018 alone, the total generation of paper and paperboard waste was 67.4 million tons, according to the [Environmental Protection Agency \(EPA\)](#), which accounted for 23.1 percent of total municipal solid waste (MSW) generation that year.

America also recycles a lot of paper. In the same year that we saw 67.4 million tons of paper waste produced, approximately 46 million tons of that waste was recycled for a recycling rate of 68.2 percent, the highest rate compared to other materials found in MSW. In fact, we recycle so much paper that our [paper recycling rate](#) has either met or exceeded 63 percent every year dating back to 2009. The rate of [cardboard \(OCC\) recycling](#) is even more impressive, with the [American Forest & Paper Association](#) reporting an OCC recycling rate of 91.4 percent in 2021.

We're able to recycle this much paper simply because of how recyclable paper is. While other materials, such as [shrink wrap plastic](#) or [used cooking oil \(UCO\)](#), can only be reused two to three times, paper can be repurposed five to seven times before the fibers become too short and weak to be used again.

We have the paper industry to thank for the overall rise in recycling rates over recent years. The paper industry has made great strides to educate consumers about the importance of recycling and to establish community recycling efforts to make the process even more straightforward. Their efforts have paid off—in 2020, nearly [80 percent of all paper mills in the United States](#) used recycled paper to create new products.

The Upsides of Paper Recycling

America's landfills are getting filled with waste at an alarming rate. These landfills take up large areas of otherwise usable land and are the leading emitter of greenhouse gases that damage our atmosphere.

In 2018, paper made up 11.8 percent of MSW landfilled, a total of 17.2 million tons of MSW paper and paperboard. By recycling paper, we can slow the rate at which these landfills expand while saving room for waste that cannot be repurposed.

The environmental benefits of paper recycling cannot be understated. According to the EPA, recycling just one ton of paper can save 380 gallons of oil, 7,000 gallons of water, and enough energy to power the average American home for up to six months.

Paper recycling also conserves our natural resources. Recycling one ton of paper can save 17 trees from being torn down. Stanford University recently recycled [over 2,303 tons of paper](#), saving roughly 32,115 trees.

Paper recycling has excellent benefits for businesses as well. Diverting paper from the landfill can dramatically reduce business waste costs, especially if your business churns through a lot of paper products. Companies with recycling initiatives can often receive tax credits from the Internal Revenue Service (IRS) and will have a better shot at engaging with eco-conscious consumers who only want to do business with [sustainable organizations](#).

The Paper Recycling Process

Before we get into the recycling process, it's important to note what type of paper products can be [recycled](#) at paper mills. These products include (but are not limited to):

- Copy paper
- Envelopes
- Newspapers
- Phone books
- Notebooks
- Catalogs
- Magazines
- Receipts

Paper shredders are good for concealing personal information from any prying eyes, but they make recycling more difficult. The small strips of shredded paper can easily become caught in the complex machinery of the recycling facility, damaging the machines or slowing down the entire process because the machines had to stop to rectify the stuck scraps. It is uncommon for curbside recycling services to accept shredded paper, but some do, so be sure to check with your local facility before leaving any out.

Step 1: Collection

The first step of paper recycling is collecting discarded paper to send to recycling facilities. We put paper into a separate recycling bin to keep it away from other waste products—contaminated paper, such as paper soiled with food, grease, or harmful chemicals, cannot be recycled and will be diverted to a landfill.

Step 2: Transportation and Sorting

With the paper placed in the proper bin, a waste and recycling hauler will come to collect your paper and transport it to a materials recovery facility (MRF) to be sorted.

At the MRF, the paper is measured and sorted into separate categories, as certain paper products will be processed differently depending on type. For instance, glossy magazine paper will be treated differently than a standard piece of printer paper, so they need to be sorted separately.

Step 3: Shredding and Pulping

After the paper has been sorted and checked for contaminants, it is baled together and sent to a paper mill, where the recycling process truly begins.

At the paper mill, paper is shredded down into small scraps. Large amounts of water and chemicals, like hydrogen peroxide, sodium hydroxide, and sodium silicate, are added to the shreds to further break down the paper into separate paper fibers. The result is a mushy concoction known as pulp, the raw material that is used to make recycled paper. (This process is known as pulping.)

Larger contaminants, such as paperclips, staples, and tape, are screened for and removed from the pulp before it moves on to the next step.

Step 4: De-Inking

Once the large contaminants have been removed, the pulp is put into a large floatation tank with more chemicals and air bubbles. The chemicals and air bubbles help remove dyes and inks from the pulp, enhancing the purity and whiteness of the pulp.

Dyes can also be added during this process to create colored paper.

The pulp, which is approximately 99 percent water to one percent fiber at this point, is then transferred to a paper machine.

Step 5: Drying

This is the final step in the paper recycling process. Once the pulp has been de-inked, it's passed through massive rollers to squeeze out excess water from the mixture. Once the moisture has been removed, the pulp is sent through heated rollers to form long rolls of continuous sheets of paper. From there, the rolls of paper are sent to various manufacturers to be produced into paper products.