

MANUFACTURING

Paper Recycling

A look at our most recycled product



EDUCATIONAL IN NATURE®

Paper Recycling Throughout History

Paper recycling has been around as long as paper itself

Right from the start

Around 2,000 years ago, the Chinese discovered that they could use a thin paste of mulberry bark, hemp and rags to make the very first piece of paper.

MOSES JOHNSON all little misses and his other customers that he receives all kinds of **COTTON OR LINEN RAGS**. Two **POUNDS OF RAGS** will buy a primer or a storybook or one yard of ribbon, two thimbles, two rings, twelve good needles, two strings of beads, one penknife, nine rows of pins.

From rags to paper

Recycling was important in colonial America. Back then, people did not know how to make paper from wood. They used cloth rags instead. Rags were so scarce that some mills advertised in the newspapers to urge the colonists to save rags for use in the paper mills.

A recycling pioneer

Mathias Koops was among the first to investigate whether he could make paper from cheaper, more plentiful materials. He received three papermaking patents in 1800 and 1801. One was for the removal of printing and writing ink from wastepaper before it was reused. The other two patents were for the manufacture of paper from straw, hay, thistles, hemp, flax and different kinds of wood and bark.

Ask your mummy

During the Civil War, rags became scarce. To get an additional supply of cloth to make paper, Augustus Stanwick imported mummies from Egypt to the United States. The mills made paper out of their linen wrappings. (Don't try this with your mummies at home.)

A paperless school

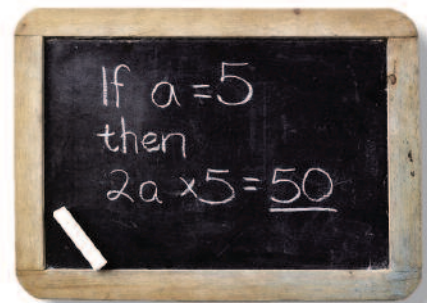
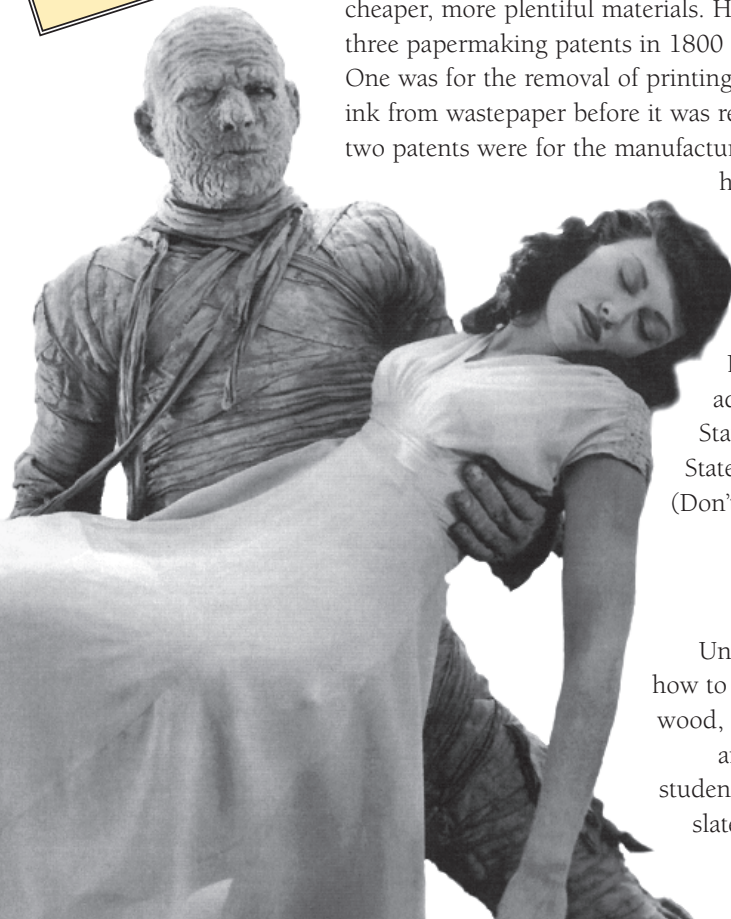
Until people learned how to make paper from wood, paper was so rare and expensive that students used chalk and slates in school to do their lessons.

PAPER FASHIONS & ART

Not all recycled paper comes back as paper or paper products

- **Walk on old magazines.** One company makes shoes from recycled materials, including fiber from old magazines.
- **News you can wear.** Peruvian women make rolled paper necklaces out of coiled strips of paper cut from magazines.
- **Art or Trash?** Many artists use scrap material in their work. Henri Matisse used different types of found paper and printed material to make collages.

Pablo Picasso sculpted three-dimensional heads from cardboard and collage materials.

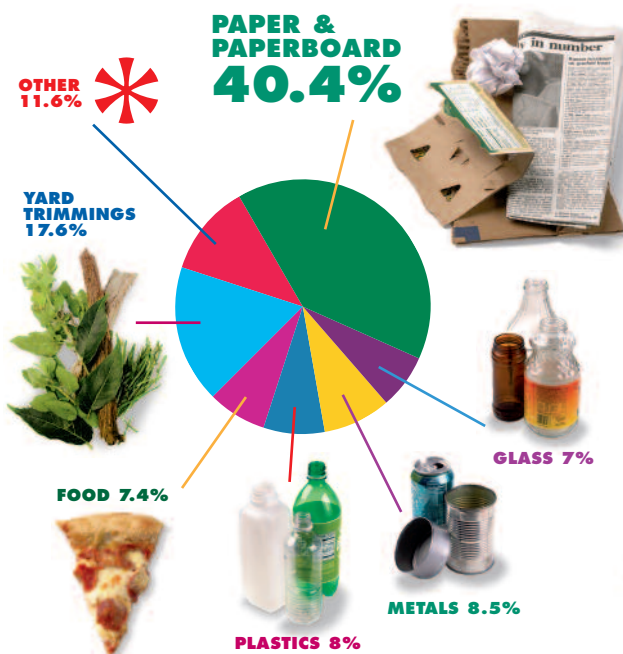


Paper Recycling

Each person in the United States uses approximately 749 pounds of paper a year. Where does it all go? Some of it goes into books or is used in other permanent applications like insulation or roofing shingles for your home.

Today, however, more Americans are recycling paper products than ever before – over 47 million tons of paper. More paper is now recovered in the United States than goes to landfills. Paper recovery now averages 339 pounds of paper per person.

What's in our waste?



Source: U.S. Environmental Protection Agency, 2002

Recycling paper makes sense because it makes our resources go farther. Paper is also easy to recycle because it is made from wood, and it separates back into fibers when soaked in water. The recycling process produces a new paper or paperboard product out of materials that might otherwise have ended up in a landfill. Recycling is one way to help manage the solid waste we generate each year.

The Wood

Paper is the most recycled product in the U.S. today.

MORE THAN 4 OUT OF 5 PAPER AND PAPERBOARD PACKAGES ...

MORE THAN 6 OF EVERY 10 NEWSPAPERS ...

MORE THAN 7 OF EVERY 10 CORRUGATED BOXES ...

ARE RECYCLED ...



That "Woodn't" Quit!

product

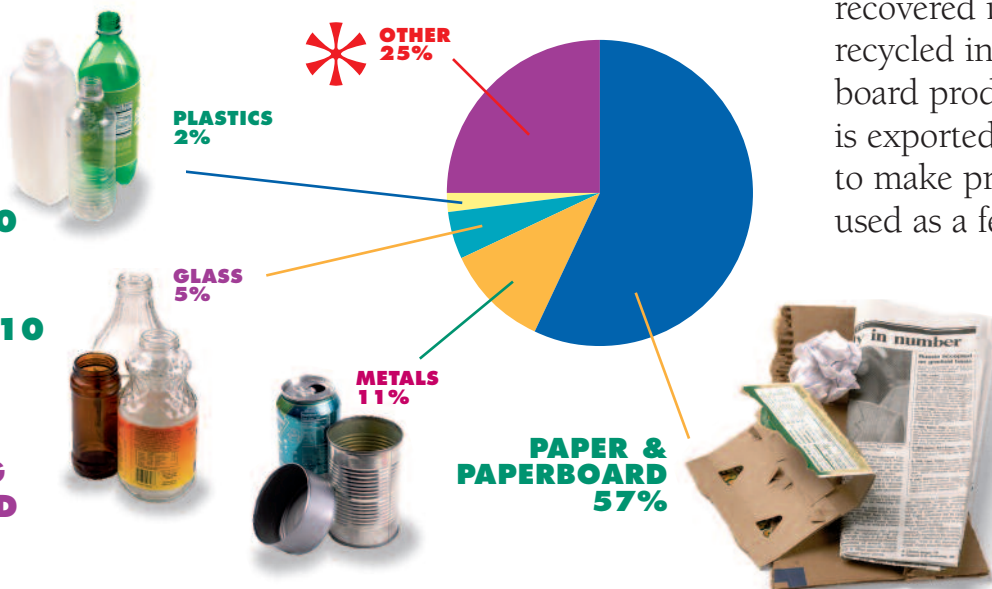
OF 10
BOARD

EVERY 10

EVERY 10
GATED
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E BEING
COVERED

What's in our recovered material?



What happens to the paper we recycle?

About 50 percent of all the paper recovered in the United States is recycled into new paper and paperboard products. The remaining amount is exported to other countries or reused to make products like compost, which is used as a fertilizer in gardening.

NEWS YOU CAN REUSE

Yesterday's newspapers become today's news as most old newspapers are recycled into new newsprint.

The Recycling Process

THERE ARE SIX MAJOR STEPS IN THE RECYCLING PROCESS:



1. PICK UP

Different types – or grades – of paper are recycled into different types of new products. That's why it's important to pre-sort your recoverable paper – for example, separating newspapers from magazines – for the people who pick it up.

2. SORTING

At the recycling center, the paper is sorted to remove contaminants – plastics, paper clips, sticky notes and other waste materials that cannot be recycled.

Then the paper is baled and sent to the mill. Bales can weigh around 1,000 pounds each!

3. REPULPING

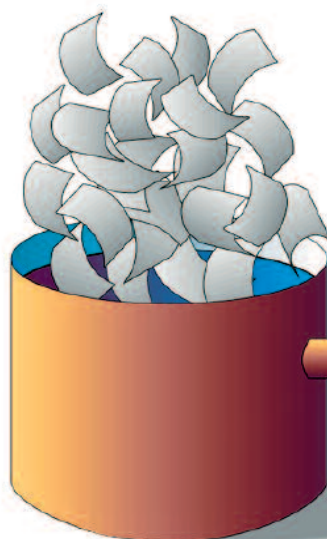
At the mill, the bales of sorted recovered paper are soaked in large vats of water and chemicals, where they separate into fibers. This creates pulp.

4. SCREENING

The pulp is then filtered through a number of screens to remove impurities such as coatings, additives, fillers and loose ink particles.

5.

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FROM HOMEWORK TO . . .

Printing and writing papers that you use to do your homework and that people in offices use for stationery and copy paper are recycled into:

- printing and writing paper
- paperboard
- tissue



WHERE DO ALL THE BOXES GO?

More than 70 percent of all old corrugated boxes are recycled back into new containerboard and paperboard products.



A Limit to Recycling

RECYCLING REUSES — AND USES UP — RESOURCES

Recycling can make our resources go farther, but when communities have to go a long way to collect those recyclables, they end up using even more resources.

They have to use fuel for the collection trucks, and they need equipment and people to sort the materials.



ALL PAPER IS NOT EQUAL

Not all paper can be recycled into new paper products.

Some papers have too many contaminants to recycle. Used paper plates and pizza boxes are not made into new paper products because food cannot be removed during processing. Other contaminants include carbon paper or plastic tape.

There is also a limit to the number of times a piece of paper, a corrugated box or other paper product can be recycled.

Each time paper is reprocessed, the wood fibers break down. They eventually get so small that they slip through the screens during the screening process and become waste that goes to a landfill.

Even Chemicals and Energy are Recycled

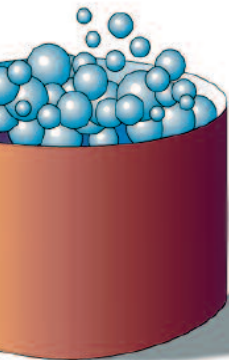
Today, U.S. pulp and paper mills recover about 98% of all chemicals used to produce pulp from wood chips.

In addition, water is reused throughout the papermaking process.

Even the energy used to run a paper mill can be converted and reused.

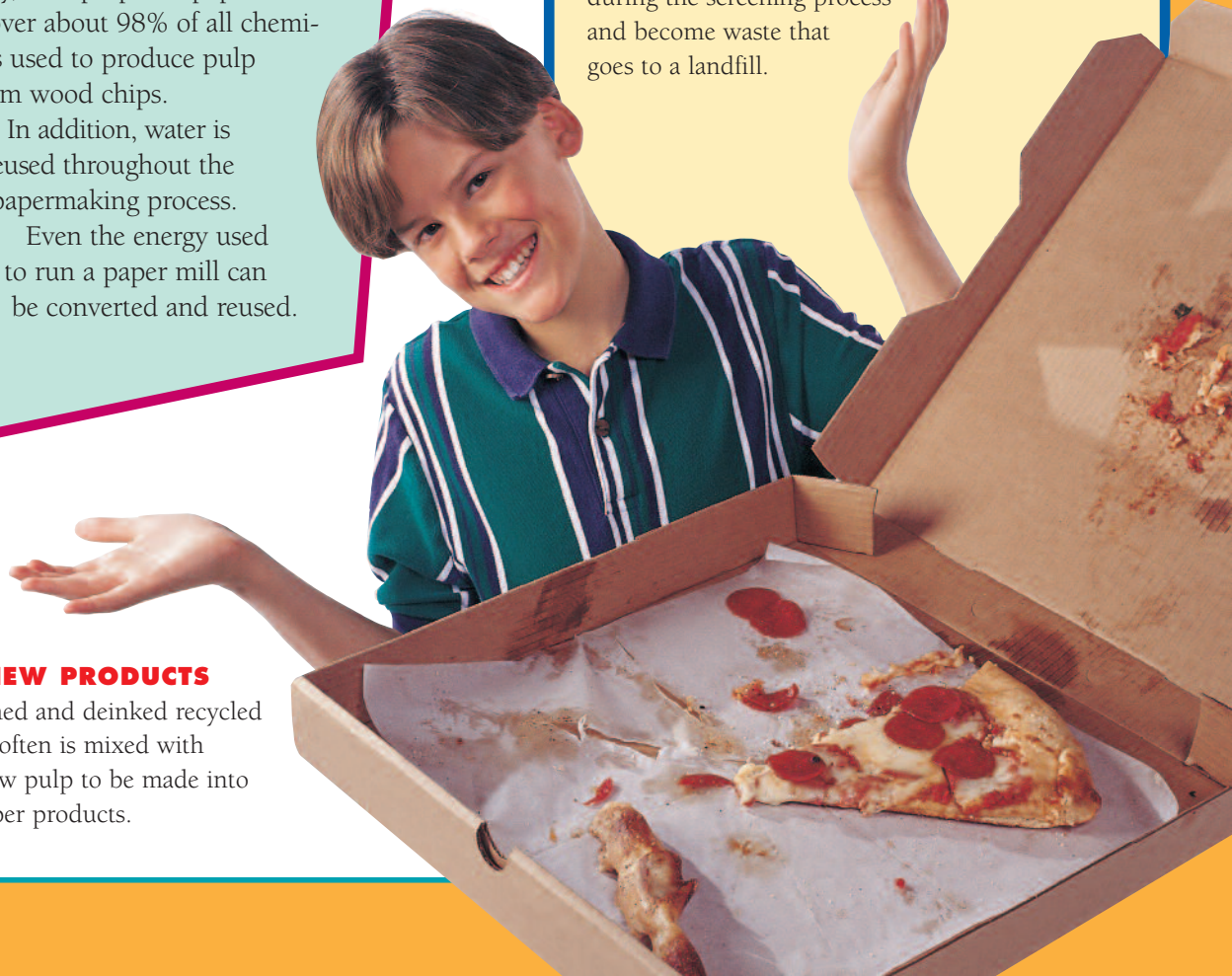
DEINKING

that had ink on such as newspapers and magazines – must have ink removed before it can be used to make a new product. The pulp enters a flotation process. Soapy chemicals are added to help the ink separate from the pulp. Air bubbles are blown into the mixture. The ink attaches to the bubbles and rises to the top. The inky bubbles are skimmed off, leaving the ink-free.



6. NEW PRODUCTS

The cleaned and deinked recycled pulp often is mixed with new pulp to be made into paper products.



Paper Recycling

ACTIVITIES & Extras

You can make paper!

WHAT YOU NEED:

- A large square pan, about three inches deep
- Three cups of warm water
- Enough water to fill one-third of the pan
- One and one-half sheets of newspaper
- Fine mesh wire screen (like a window screen) to fit into the pan
- A rolling pin
- A whole section of a newspaper
- A blender (you'll need an adult to help you)



One: Tear the newspaper into tiny pieces.

Two: Put the newspaper pieces and all three cups of water into the blender, cover it and turn it on medium speed for about five seconds. You've just made pulp!

Three: Place the screen on the bottom of the pan and cover it with one inch of water.

Four: Pour about one cup of the pulp over the screen and spread it around evenly with your fingers.



Five: Lift the screen and let the water drain.

Six: Put the screen, pulp side up, on the section of newspaper. Close the newspaper and flip it over so that the pulp is now face down.

Seven: Take a rolling pin and roll out the excess water. Open the newspaper and remove the screen.



Eight: Leave the newspaper open and let the pulp dry overnight. In the morning, peel the "recycled paper" away from the newspaper. Congratulations! You've just recycled newspaper into a new piece of paper!



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Learning supplements for environmental education.

WORDS TO KNOW

collage – a piece of artwork made by cutting materials such as colored paper and old magazines and pasting them onto a surface to create a pattern or picture

deinking – removing ink and other finishing materials, like coatings, sizings and adhesives, from printed paper

fibers – the long, thick-walled cells that give strength and support to plants

landfill – a site where garbage is taken

paperboard – a thick, strong paper primarily used for food packaging and other containers

pulp – a mixture of fibers and water from which paper is made

recycling – a process where used materials are sorted, cleaned and made into new products