

# Understanding Where Garbage Goes

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We call it many things: garbage, trash, rubbish, waste. The recycling industry calls it “municipal solid waste,” or MSW. All these words mean “things we throw away.”

For a few decades, Americans really could just throw away whatever they didn’t want without ever thinking about it again. But as we are finally learning, there is no such place as “away.” Even the most efficient household still [generates some waste](#), and all that garbage has to go somewhere.

Where does that garbage go?

## Multiple Streams

Answering that question is surprisingly tricky, and can involve a combination of [scientific studies](#) and compilation of hauler data. The most recent [EPA data](#) available is from 2015.

Recycling rates vary widely throughout the country. In the United States, 25.8 percent of the MSW was recycled in 2015, and another 8.9 percent was composted. The remaining 65.3 percent was disposed of as garbage.

In the U.S., there are two primary methods of garbage disposal — landfilling and incineration. Each method has a significant long-term impact on the environment.

## Landfill Disposal

Landfilling is more common by far, though we don’t have recent data to understand how changes in the recycling industry, such as [China’s ban](#) on contaminated recyclables imports. In 2015, 52.5 percent of MSW went to the landfill. Today that number is probably higher, as many communities have reduced or eliminated their recycling programs since China changed its policy at the beginning of 2018.

The total volume of U.S. recycling revenue in the U.S. has declined by as much as \$10 billion since the ban went into effect, falling from [\\$117 billion in 2017](#) to [nearly \\$110 billion in 2019](#), according to the Institute of Scrap Recycling Industries. The decline is due to the falling price of commodities such as glass and plastic.

Although the majority of U.S. cities and towns resort to landfilling, there is a wide range of practices that can fall under the term. Technically, a [landfill](#) is not the same thing as a dump. A landfill isolates waste from the environment until it is safe. Landfills must meet the [criteria](#) for hydrogeological separation of waste and for the long-term management and restoration of the site. Any waste site that does not meet these criteria is a dump.

Dumps [proliferated](#) in the U.S. throughout the mid-20<sup>th</sup> century. The Solid Waste Disposal Act of 1965 created a federal office to manage trash, and by the mid-1970s,

states had established waste management regulations. Today, the [Resource Conservation and Recovery Act](#) (RCRA) creates the framework for the proper management of all types of solid waste. [Subtitle D](#) of RCRA establishes the stringent design, operation, and closure requirements for modern landfills.

## Incineration

[Incineration](#) disposes only 12.8 percent of the country's MSW. Like landfilling, the [process has changed](#) a lot over time, so that the environmental impacts can vary widely depending on the local system. The earliest incinerators were just large furnaces that reduced the volume of waste before sending ashes and incompletely burned waste to a dump. The 1970 [Clean Air Act \(CAA\)](#) banned the uncontrolled burning of MSW and placed restrictions on particulate emissions, requiring existing incinerators to install new technology or cease operations.

Today, air quality standards require much cleaner emissions from the [combustion](#) of MSW, and heat released from burning is usually used to produce electricity. The waste management industry usually calls incineration “waste-to-energy,” or WTE, to emphasize how much this method of disposal has evolved from 20<sup>th</sup>-century practices.

## Emerging Technology

In time, numerous promising technologies may replace landfilling and WTE. Among these are waste conversion technologies like [pyrolysis](#), [gasification](#), [depolymerization](#), and [anaerobic digestion](#). However, none of these or other emerging technologies can handle the entire MSW-stream for whole communities — yet.



Do you know where your garbage goes? Image: Adobe Stock

## What's Best?

People have very strong feelings about garbage disposal methods, but none of them are without problems. Landfills take up a lot of space — up to [1,600 acres](#) — that could be put to better use. Urbanization and unsuitable soil conditions make [siting a new landfill](#) impossible in many regions. There is a risk that landfills active today could develop [leaks](#) in the future, and thousands of old landfills continue to leach chemicals into nearby soils. Older and even many newer landfills release [landfill gas](#), the third-largest source of human-related methane emissions in the United States.

Despite system improvements, incineration still has drawbacks, too. Not all byproducts of combustion are as beneficial as electricity. From 15-25 percent (by weight) of the MSW burned remains are ash. Bottom ash goes to the landfill. Fly ash [can be recycled](#) as an ingredient in concrete but is also a [hazardous material](#) that contains heavy metals and other pollutants. WTE facilities also tend to be [more expensive](#) to operate than landfills.

Whether landfilling or WTE makes more sense for a community depends on the resources and eco-vulnerabilities of the location. The availability of hydrogeologically suitable space for a landfill is a key factor. Increasingly, communities are finding that they lack the resources to dispose of their own waste and must contract with a remote facility. In those cases, the environmental and cost impacts of transportation complicate disposal decisions.

## Where Does Your Garbage Go?

Some local governments collect and dispose garbage themselves. More often, they contract with private companies for all or part of the process. For example, [Seattle, Washington](#), contracts with two private companies to collect MSW from homes. Those companies take waste to city-operated transfer facilities that compact it into shipping containers. The containers go to an intermodal transfer facility operated by a railroad company. There, they load the containers onto trains that deliver the waste to a privately-owned landfill in Oregon.

To trace your own waste, start with your city or county's website. You might find your local solid waste management plan. This plan should describe in detail the flow of waste from curbside pickup to final disposal. If your local waste utility does not post that information online, you can call the number on your garbage bill. Garbage may be included in the same bill as water and sewer or billed separately. The bill may come from your city or the garbage hauler. Either way, customer service should be able to tell you where your garbage goes after it leaves your house. Garbage never goes away, but you might be surprised to find out how far it travels.

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