



Eureka Recycling is a nonprofit organization, created by the Saint Paul Neighborhood Energy Consortium, that specializes in recycling and waste reduction and manages Saint Paul's recycling program. Our mission is to reduce waste today through innovative resource management and to reach a waste-free tomorrow by demonstrating that waste is preventable not inevitable. We believe that our resources are valuable—like gold—and our goal is to provide you with an opportunity to conserve them.

## Recycling Plastic: Complications & Limitations

Plastic is light, easy to store and transport, comes in an endless variety of textures and shapes and can hold almost anything. Those properties make it attractive to manufacturers and packagers, who use it for anything from ketchup bottles to disposable utensils. Unfortunately, plastic is much more difficult to recycle than materials like glass, aluminum or paper. Most plastic soon ends up in a landfill or incinerator. Despite promotion of plastic recycling, plastic production has outpaced recycling by five times over the past decade. While increased plastic recycling is one way to alleviate this problem, it has only limited potential to reduce the glut of plastic waste.

### Resin Codes Don't Equal Recyclability

Almost all plastic products are imprinted with a resin code — a small number enclosed by the “chasing arrows” symbol. This code can be misleading, since it is not intended to indicate that the plastic is recyclable. Rather, the resin code is used by the plastics industry to indicate the general type of chemical compound used to make the product.

The resin codes were adopted by the Society of the Plastics Industry (SPI) in 1988 to provide an industry-wide standard that would make it easier to identify and sort recyclable plastic. As the SPI points out on its web site, “The code was not intended to be — nor was it ever promoted as — a guarantee to consumers that a given item bearing the code will be accepted for recycling in their community.”

### Sorting Plastic: Thousands of Variations

Although there are only seven resin codes, there are actually thousands of different types of plastic. Different combinations of dyes and additives can be added to the basic resin to produce a desired color, shape and texture in the final product. These variations in the manufacturing process lead to different melting points and other properties within the same resin code. **To be made into another product, plastic must be carefully sorted by type. Combining different types of plastic renders it useless for manufacturing.**

The technology exists to recycle most kinds of plastic, but a lack of infrastructure prevents all but the most widespread kinds of plastic from being recycled. For recycling to work, communities must be able to cost-effectively collect and sort plastic, and businesses must be willing to accept the material for processing. Collection is expensive because plastic bottles are light yet bulky, making it hard to efficiently gather significant amounts of matching plastic. Only a few kinds of plastic have the supply and market conditions that make recycling feasible.

The Plastic Numbering System	
	<b>Polyethylene Terephthalate</b> Soda and water bottles, cooking oil bottles
	<b>High Density Polyethylene</b> Detergent bottles, milk and juice jugs
	<b>Polyvinyl Chloride (PVC)</b> Plastic pipes, shrink wrap, a few food containers
	<b>Low Density Polyethylene</b> Wrapping films, produce bags
	<b>Polypropylene</b> Drinking straws, yogurt tubs, syrup bottles
	<b>Polystyrene</b> Styrofoam cups, peanuts, to-go containers
	<b>Other (usually a mixture of resins)</b> Food containers

For more about Eureka Recycling's services and FREE information, contact:

**EUREKA! RECYCLING**

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**Recycling Hotline**  
**(651) 222-SORT (7678)**

TTY for the hearing impaired (651) 221-9832  
FAX: (651) 221-9831  
[www.eurekarecycling.org](http://www.eurekarecycling.org)

In Saint Paul, as in most communities, only bottles with “necks,” marked with resin codes one or two, are collected for recycling. Containers without necks, such as tubs and trays, are not recyclable, even if they are marked with a one or a two. This is because plastic bottles are “blow-molded,” while plastic tubs are “injection-molded:” the different additives used in each process mean the two cannot be mixed during recycling. Bottle caps, which are not the same kind of plastic as the bottles, must be removed, and the bottles should also be crushed so that bins don’t fill up so quickly — this saves money for the recycling program. Plastics with codes three through seven are NOT recyclable in most programs.

Some recycling programs collect all types of plastic in order to recover more of the kinds of plastic that can be recycled. In these “all bottle recycling” programs, the non-recyclable plastics must be sorted out — a labor-intensive and costly job — and most of what is collected must be sent to a landfill or an incinerator.

## Plastic Doesn’t Close the Loop

Once plastic has been collected and sorted, it faces a weak market. Simply collecting plastic does not mean that there will be a buyer willing to pay for the raw material. It is often cheaper and easier to make plastic containers from new, nonrenewable resources. Plastic resin has limited value as a commodity because its quality degrades every time it is reheated. Consequently, **most plastic is only reprocessed once before it goes to a landfill.** “Downcycling” is a more accurate term than “recycling” when it comes to plastic.

Unlike glass or aluminum, plastic recycling does not “close the loop” because most postconsumer bottles are not made into new plastic bottles. Instead, milk jugs, soda containers and other bottles are turned into lower-grade products such as jacket fill, fleece, carpet, toys or plastic lumber. None of these products are in turn recyclable.

When we collect and remanufacture plastic, we are only delaying its disposal. The final destination for all plastic is either a landfill, where it doesn’t decompose, or an incinerator, where it releases harmful chemicals when burned.

In a 2000 study, the MN Office of Environmental Assistance found that plastic comprises 11 percent of municipal solid waste by weight. Landfills, however, don’t get heavy — they get full. If plastic’s light weight and bulk is taken into consideration, it is

likely that it is taking up considerably more than 11 percent of our landfill space.

Recycling reduces the ecological impact of plastic, but it remains more complicated, more expensive and less effective than other parts of the recycling industry. No matter how many chasing arrows are printed on plastic products, it doesn’t change the fact that plastic is largely a throwaway material.

## Health Risks of Plastic

Plastic is associated with health risks in all stages of its life cycle. The production of plastic releases toxic chemicals such as benzene and vinyl chloride, which can cause cancer. When plastic is used to package food, toxins and carcinogens can migrate from plastic containers to food and beverages inside the container, especially when the plastic is heated. And the incineration of plastic pollutes air, land and water despite efforts to keep emissions clean. Polyvinyl chloride (PVC), used in plastic pipe, shower curtains and shrink wrap, is particularly dangerous because of the presence of chlorine in the resin. PVC releases dioxin, a known carcinogen, into the air during both production and incineration.



## Should You Still Recycle Plastic?

Yes! Recycling plastic is still better than sending it to the landfill or an incinerator. But an even better approach is to reduce your use of plastic. For information on plastic recycling in Saint Paul and for tips on reducing your plastic consumption, call for our fact sheet “Plastic Bottle Recycling.”