

THE LIFECYCLE OF RECYCLED PLASTIC IN MINNESOTA

Sustainability Specialist Chelsey Sloan



What happens to a plastic bottle after you put it in the recycling bin? There is plenty of speculation about where our plastics end up after the blue bin - being shipped overseas, ending up in the ocean or simply being thrown away as trash. While there can be some truth to these claims globally, it's important to understand that recycling is largely a regional system. Here in Minnesota, much of our recycled plastics stay within the U.S., the Midwest or even in the state, where they are processed and turned into new products. This network of processors and manufacturers helps ensure that these valuable materials are recovered and put back into use.

As a Sustainability Specialist with Waste Wise, I wanted to better understand the journey our plastics take after the blue bin. To find out, I spoke with recyclers in Minnesota who work at different stages in the plastics recycling system.

Collecting and sorting

When you place a plastic bottle into the recycling bin, its journey is just beginning. In Minnesota, collected recyclables are transported to materials recovery facilities (MRFs), where they are sorted into the following categories: paper, cardboard, cartons, metal, glass and different types of plastics. Most curbside recycling programs in the state accept plastic containers with resin codes #1 (PET), #2 (HDPE) and #5 (PP), which have established recycling end markets.

To see this sorting stage in action, I visited two Minnesota MRFs: Dem-Con Companies in Shakopee and Eureka Recycling in Minneapolis.

Sustainability Specialist Chelsey Sloan with recyclable plastic bales



Dem-Con Companies

At Dem-Con's MRF in Shakopee, trucks arrive daily carrying recyclables from across roughly a 1,000-mile radius. Acting as a regional processing hub for recycling haulers, the facility handles a constant stream of mixed recyclables, with plastic bottles and containers moving along conveyor belts through a system of screens, scanners and sorting stations.

Much of the work of separating plastics relies on advanced sorting technology. Optical sorters use infrared sensors to identify different plastic resins and direct them into separate streams. Separating the plastic containers by type is important because each type of plastic must be processed differently before becoming new products. While automation has greatly improved sorting efficiency, people remain essential to this process. Workers monitor equipment, remove problematic items and ensure plastics are properly sorted before being baled and transported to the next stage.

Challenges with contamination

For recycling professionals like Dem-Con's President, Bill Keegan, the message to the public is simple: what you put in the bin matters. In Minnesota, the average recycling contamination rate is about 12 percent by weight. State law requires haulers to deliver recycling to a MRF where machines and workers separate these contaminants from recyclables. While these facilities can handle some incorrect items, contamination slows sorting lines, lowers the value of recyclable materials and increases processing costs, ultimately raising the overall cost of recycling for the entire system. These added costs are often passed down to residents and businesses through higher recycling costs and contamination fees.



Sorted #1 (PET) plastic bottles on a conveyor belt getting ready for baling.

Some items also create serious safety risks. Lithium-ion batteries from electronics, power tools and electronic cigarettes can spark fires if crushed. When Dem-Con's MRF first opened, it went four years without a battery fire. Today, the facility experiences two to three fires each month. To address this, they focus heavily on prevention efforts by participating in fire open houses, exhibiting to the public and educating residents about proper battery disposal. On-site, they use Fire Rover technology to detect fires early, have trained staff who can respond to fires quickly and safely, and rely on water cannons throughout the facility to help suppress fires when they occur.

Even with these contamination challenges, Keegan emphasizes that the system is working: "When you put the right thing in the recycling bin, it does get recycled."

Small actions, real impact

When plastic bottles and containers are placed in the bin correctly, they move through a system designed to recover valuable materials and prepare them for their next life as new products. To recycle your plastics correctly, make sure containers are empty and dry, replace the cap and throw away straws, pumps and sprayer tops. Look for resin numbers #1, #2 or #5 inside the chasing arrows symbol – if you don't see one of these numbers, the item is not recyclable in Minnesota curbside programs.

Keep caps on containers so they stay together and get recycled. Loose caps are too small and slip through sorting equipment, contaminating other material streams.



Eureka Recycling

In Minneapolis, Eureka Recycling operates a MRF processing recyclables from households and businesses across the Twin Cities. The nonprofit processes approximately 400 to 450 tons of recyclables each day, including large volumes of plastic bottles and containers collected through curbside programs. Once processed, much of this material stays relatively close to home. In 2025, 52 percent of Eureka's finished bales went to recyclers in Minnesota, 96 percent stayed in the Upper Midwest and 100 percent remained in North America.



Cardboard boxes on the tipping floor at Eureka Recycling.

Recycling markets: A moving target

Sorting materials is only one part of the recycling system - market demand is just as important. Recycling depends on stable end markets, the companies and manufacturers that buy sorted bales of recyclables and turn them into new products. Eureka Co-President, Miriam Holsinger, describes the system as constantly shifting with supply and demand.

"I like to compare us to farmers," Miriam said. "Sometimes we're having a bumper crop of cardboard boxes."

The same is true for plastics. When supply is high - such as increased plastic beverage bottles in the summer - prices can drop and materials become harder to place. PET plastic has become especially challenging recently as recyclers face an oversupply of material, cheap virgin resin prices and weak demand for recycled content. This is one reason why manufacturers choosing to use recycled material in their products is such an important part of keeping the recycling system working. When demand is strong, plastics move more efficiently through the recycling system.

Once sorted and baled, plastics are transported to recyclers that shred, wash and convert them into pellets or flakes used to manufacture new plastic products. This system depends on a connected network of processors, manufacturers and transportation routes. Changes at one point in the system, such as shifting capacity or a plastics recycler shutting down, ripple across the entire recycling chain.



Plastic bales at Eureka sorted by plastic type

Recycling only works as a system

Miriam emphasized that recycling only works when people participate and understand its impact. As she notes, many people still assume recycling does not matter, but this simply isn't true. Recycling reduces reliance on landfills and drives economic activity, with approximately 78,000 Minnesota jobs being directly or indirectly supported by the recycling industry. Participation in this system is a critical part of the equation.

When plastics are placed in the bin correctly, they don't disappear - they become part of a broader system that turns used materials into new products. But when recyclables are thrown in the trash or contamination ends up in the recycling bin, that system becomes less efficient; valuable plastics are harder to recover, processing costs increase and more material is lost to disposal. Each step depends on the one before it, and when people participate consistently, they help keep that system running smoothly.

Processing and pelletizing

After plastics are sorted and baled by type, they are loaded into tractor trailers and shipped to the next stage of their journey, where they are processed and prepared to be recycled into new products.

This stage often starts with additional sorting to remove any lingering contaminants. From there, plastics are shredded into flakes, washed to remove labels and residue, melted in an extruder, filtered and turned into pellets. Some recyclers specialize in post-consumer plastics, which are items that have already been used by consumers, such as plastic bottles or containers collected through recycling programs. Others focus on post-industrial plastics, which are leftover scraps and trimmings generated during manufacturing before products ever reach consumers.

Choice Plastics

Located in Mound, Minnesota, Choice Plastics is a plastic recycler that works almost exclusively with post-industrial plastic scrap generated during manufacturing before reaching consumers. Their incoming material includes off-spec plastic products that do not meet a manufacturer's specifications, scraps from the production of plastic signs, cards and display materials, old and broken recycling and trash carts, and leftover or offcut material from manufacturers across Minnesota.

Inside the facility, these plastics are sorted and ground into flakes known as "regrind" or melted down into pellets. Choice Plastics then sells this recycled material to manufacturers making products such as agricultural drainage tile, composite decking, flowerpots, plant trays and outdoor furniture. Some of the printing industry scrap they receive is recycled into new plastic sheets for the printing industry - an example of a closed loop system, where a product is made, used, then turned back into that same product. Many of Choice Plastics' suppliers are in the Midwest, including companies such as Loll Designs in Duluth, which makes outdoor furniture using plastic with recycled content.

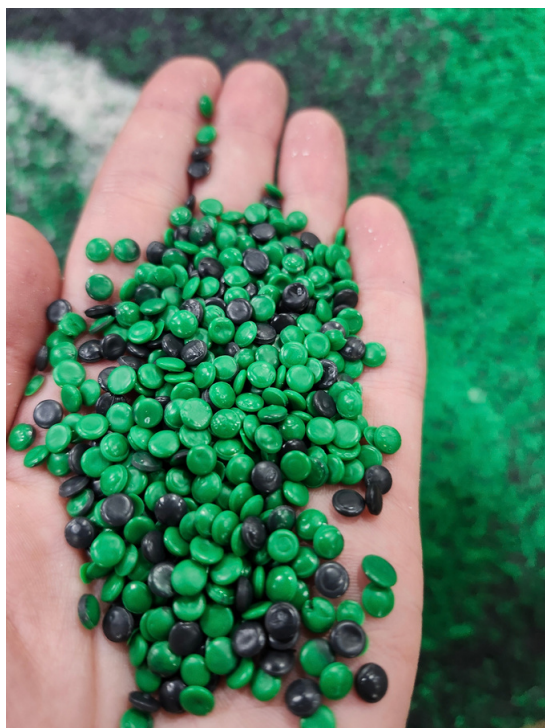


Plastic offcuts from printing operations are cut up into small pieces called regrind.

'Save the molecule!'

This phrase came up repeatedly during my conversation with Choice Plastics' owner and president, Steve Hall, and it captures the company's philosophy well. The idea is simple: a tremendous amount of energy and resources already went into creating the plastic that currently exists. Recycling preserves those materials so they can continue circulating through the economy instead of being discarded after a single use.

That philosophy also shapes how Choice Plastics thinks about product design and consumer expectations. Hall noted that cosmetic preferences can make recycling more difficult, especially when manufacturers demand perfectly clear or consistently colored plastic packaging.



Pellets made from recycled plastics at Choice Plastics, ready to be manufactured into new products.

Clear plastics are often more valuable because they can be made into any color. Colored plastics, however, have limited end markets as they can only be recycled into products of the same color or darker, limiting how the material will be used next.

"We don't need to have clear Coke bottles or perfectly orange Tide bottles," Hall explained. "We should focus on reusing the plastic that's already out there, even if it's a different color."

Market pressures and looking ahead

Like many recyclers, Choice Plastics faces challenges competing with inexpensive virgin resin. Recycled materials can be harder to sell when manufacturers can buy virgin resin at similar or lower prices. Hall believes stronger demand for recycled content, along with better product design for recyclability, could help strengthen markets for recycled plastics in Minnesota. He remains optimistic about the future of recycling for plastics, pointing to growing public awareness, technological advancements and increasing conversations around extended producer responsibility (EPR) and recycled content policies.

GDB Circular

While Choice Plastics focuses primarily on post-industrial scrap, GDB Circular in Rogers specializes in recycling post-consumer plastics. The company operates plastic recycling facilities in Minnesota, New Jersey and Tennessee, producing post-consumer resin (PCR) through a combination of optical sorting, friction washing and extrusion.

GDB Circular's Rogers facility can process up to 45 million pounds of plastic annually and operates two processing lines: one for HDPE plastics such as milk jugs, and another for LDPE and LLDPE film plastics such as stretch wrap. After purchasing plastic bales, GDB further sorts and cleans the material at a separate facility to



Baled film plastics awaiting processing at GDB Circular

ensure they are working with the highest quality material as possible. The plastics are then sent to the Rogers facility, where they are shredded, washed, melted and formed into pellets that manufacturers can use in new products and packaging. Both lines are certified to produce food-grade recycled resin, meaning materials like recycled milk jugs can be turned back into food-grade packaging.

Some of GDB Circular's feedstock comes from Minnesota recycling programs, including milk jug bales sorted by Eureka Recycling. However, because the facility is still relatively new, much of its incoming material currently comes from outside Minnesota through established supplier relationships across North America. GDB Circular is actively working to build more partnerships within Minnesota and is looking to expand relationships with local suppliers and recycling programs as they continue to grow.

Closing the loop on boat wrap film

GDB Circular is also finding ways to strengthen regional recycling loops through targeted partnerships. One pilot project focuses on recycling boat wrap film - plastic used to wrap and protect boats during storage and transport. This material is typically difficult to recycle due to contamination, moisture and odor.

Through a partnership with Charter Next Generation and the Council of the Great Lakes Region, GDB Circular is working to develop a process to clean the film so it can be recycled into plastic pellets. Those pellets will then be sold to film manufacturers that can use the recycled material to produce new boat wrap, creating a closed loop system. This project aligns with Minnesota's growing focus on boat wrap recycling and product stewardship law, which aims to expand collection and recycling opportunities for

marine plastics across the state. The work also demonstrates that even challenging materials can be recovered and reintroduced into manufacturing streams when there is collaboration across consumers, recyclers, manufacturers and policymakers.



Plastic milk jugs from Eureka Recycling are sent to GDB Circular where they are recycled into pellets that can be used to make food-grade plastic containers again.

Holding steady in a shifting industry

The recycling industry can be a challenging one to navigate, with changing market conditions, fluctuating material prices and inconsistent supply and demand. GDB Circular's CEO, Avinash Singh, emphasized the importance of staying committed through market downturns, noting that when recycling businesses close it can send the wrong signal to the broader industry. As he put it, "a rising tide lifts all boats, but a falling tide can just as easily pull them down," reinforcing the need for long-term commitment even during difficult market conditions.

Despite these challenges, Singh remains optimistic about the future of the industry and the growing demand for recycled content. "I have a great amount of confidence in the consumer and in general human beings doing the right thing," he said. "People will continue to come around to it."

Manufacturing

Avon Plastics

The recycled plastic pellets made by processors like Choice Plastics and GDB Circular only have value if someone wants to buy and use them. Avon Plastics helps create demand for recycled plastic by using it in their landscape edging, composite decking and other products sold across the country under their Master Mark and Armadillo brands.

Avon Plastics purchases recycled HDPE (#2 plastic) from many sources across the Midwest and U.S. Materials arrive from post-consumer recycling programs in Minnesota, Wisconsin, Illinois and Iowa, manufacturing operations throughout the region, and agricultural businesses in Iowa, Texas and California that generate large volumes of used pesticide and herbicide containers.



A cross-section of Avon Plastics' composite decking, showing recycled plastic and wood fibers at the core

At Avon Plastics, recycled plastic isn't just an additive; it's the core material in many of their products. Their landscape edging is made almost entirely from recycled plastic (98%), with only a small amount of additives used to achieve the finished black color. Their composite decking is also made primarily from recycled materials. The core of each board contains 95% recycled content, including up to 40% recycled HDPE (#2 plastic), along with recycled wood fibers and additional resin additives. The outside of the decking is coated in a thin layer of virgin resin to create consistent colors. This keeps recycled plastic at the center of the product while still achieving the desired appearance.

Creating consistency from recycled materials

One challenge of working with recycled plastic is that no two bales are exactly alike. Depending on where they originated, bales can vary in color, density, melt characteristics and contamination levels. To ensure the material meets their product specifications, Avon Plastics carefully tests incoming materials and measures key characteristics, such as melt index and density, to understand how the plastic will behave during manufacturing. They often blend different grades of recycled plastic together to create a consistent material mix. By carefully managing the blend, Avon Plastics is able to reach the desired melt range, allowing the plastic to flow properly during extrusion and produce a reliable, high-quality finished product.

This attention to quality control is what allows Avon Plastics to transform variable recycled plastics into products that meet the same expectations for durability and consistency as those made with virgin resin. "We want to ensure specific material qualities and have consistent material supply when using recycled materials, and with having strong partnerships in the industry we can achieve this," said Nick Scherping, Purchasing Manager at Avon Plastics.



Recycled plastic pellets are melted and extruded into lawn and garden edging.

Catching plastics that slip through the cracks Cool Trash

While Avon Plastics demonstrates how recycled plastic can be transformed at an industrial scale, Cool Trash showcases this through a smaller, more artisanal approach. Based in Minneapolis, Cool Trash focuses on plastic materials that often fall outside traditional recycling systems and gives them a second life through locally made products.

Founder Emma Crutcher-McGowan creates earrings, buttons, vinyl record displays, signs, plant stakes and more from a variety of hard-to-recycle plastics, including medication vial caps from a local hospital, plastic beverage carriers from nearby breweries, pill bottles, manufacturing scraps and discarded vinyl records from local record pressing company, Outta Wax. Many of these items fall outside traditional recycling systems because they were not designed for single-stream recycling and cannot be processed by existing infrastructure. Cool Trash fills this gap by turning them into products sold directly to consumers and retailers, while also partnering with businesses and organizations to create custom products from their own plastic waste.

During our conversation, Crutcher-McGowan described their approach as "curb-to-ear." Inspired by the farm-to-table movement, the phrase captures the journey discarded plastic takes from the curb to becoming a one-of-a-kind earring. Instead of sending materials far away for processing, Cool Trash keeps the process local by collecting plastics in their own backyard (figuratively and literally) and transforming them into new products made close to home.



Medication vial caps collected by HCMC



Earrings made from recycled plastic

Creating value from local materials

For Cool Trash, the challenge isn't finding enough plastic – it's finding enough capacity to process it all. "We're seeing more of everything," Crutcher-McGowan said. "There's more than we can handle currently. There's no shortage of plastic waste."

The variety of materials Cool Trash receives reflects just how much plastic exists in everyday life. Once people begin to see plastic as a resource rather than something disposable, Crutcher-McGowan said, they start noticing opportunities everywhere. "Look around," she said. "It's literally all over the place."

That shift in perspective is central to Cool Trash's work. By giving discarded plastics a new purpose, Crutcher-McGowan shows how materials often viewed as waste can become valuable resources when there are systems in place to collect, process and transform them. Cool Trash puts this into practice by creating products made from 100% recycled plastic and operating a take-back program that accepts broken or defective items they've made and recycling them into new products, keeping the material in use.

For Crutcher-McGowan, creating demand for recycled plastic starts with making products people genuinely want. "I wanted to make stuff that was interesting, beautiful, functional, cool, and then later people find out that it's made of recycled plastics and it's even more cool because of that."

By focusing on creativity and design, Cool Trash helps shift the way people think about recycled products - not as a compromise, but as a unique feature of the final product.

A Minnesota-made circular economy

Crutcher-McGowan believes Cool Trash's success is closely tied to Minnesota's strong network of businesses, communities and organizations working to support recycling and sustainability. Local partnerships provide materials, customers create demand for recycled products, and a culture of collaboration has helped create space for experimentation and innovation.

"The community here - I could not have built my business anywhere else," Crutcher-McGowan said. "There's so much support for recycling and innovation...I know that what we're doing will work here. We have the resources for this to succeed here in this state."

Her experience highlights an important part of building a circular economy: successful recycling systems require more than collection and processing infrastructure. They also depend on relationships, collaboration and businesses willing to create new markets for recovered materials.

Cool Trash and Avon Plastics work at different scales, but both demonstrate the same core idea: recycling only works when there are end markets ready to use the recovered material. Collection and processing are essential, but the loop is not truly closed until recycled materials become new products that people want to buy and use. By creating demand for recycled plastic, these manufacturers help keep materials in circulation and demonstrate what a more circular economy can look like in practice.