TURNING POINT FOR RECYCLING

A series on the evolution and future of waste recovery

Chagrin Valley Times · Solon Times · Geauga Times Courier

Sorting out changes in recycling

Government leaders across Cuyahoga and Geauga counties continue to struggle with the changing guidelines for recycling. At the Times newspapers, we found council members, township trustees and mayors asking the same questions.

That signaled a need for reporters to start digging into the particulars of recycling. We found that the way families recycle depends on where they live. The process differed greatly between eastern Cuyahoga suburbs and the rural Geauga communities. The result of our inquires was a series of informative stories with a goal of clearing up misconceptions, detailing collection specifications and informing readers about the worldwide changes that continue to impact recycling at home.

Over the years, families have learned the importance of reusing, reclaiming and reprocessing materials to cut down on waste and help Mother Earth become healthier.

But as soon as we learn the newest and most accepted practices, the rules change. One of the reporters' goals was to find out what is triggering the changes.

We learned China was eager to take our recyclables in past years, but all that changed in 2013 when the country began to demand materials with very low contamination levels.

The 1969 fire in the Cuyahoga River set the stage for the passage of the Clean Air Act in 1970 and the Clean Water Act in 1972. Restrictions on dumping, burning and other practices to deal with waste slowly forced Ohioans to change their habits. Then came curbside recycling in the 1990s with separate bags and then single stream for more efficiency in pickups.

The Times explored why single-use plastic bags need to be dropped in a collection bin at your neighborhood grocery or retail store, not in the recycle bin at home. It's not because they cannot be recycled; they can. And we found the companies that give those bags new life.

Glass is another material that has caused confusion. The material made of sand, limestone and soda ash can be recycled over and over again. But some collection companies won't accept glass today. We explained why and talked to the experts about the factories that do indeed turn old glass into new containers.

There are places to dispose and sometimes recycle hazardous waste like paint, batteries and even those old computers sitting in your basement. We sort out the different practices.

What has not changed is the need to recycle and refrain from using materials that cannot be given a second chance at life.

Reduce, reuse, recycle. Though not always easy or convenient, experts say these are steps everyone should be taking for a sustainable environment. Working together as a regional community is the only path that will keep the Earth safe for future generations. Are you ready to do your part?

Editor Ellen J. Kleinerman

Chagrin Valley Times, Solon Times, Geauga Times Courier

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Curbing our carbon footprint by recycling

Our carbon footprint will remain long after we are gone. But we can take steps to reduce it. When people choose to recycle, fewer virgin resources are needed to create new items, such as cans, glass or plastic, which results in less energy used to make products and transport raw materials. Recycling also reduces the amount of waste that ends up in landfills. Both can lower greenhouse gas emissions, which are a leading cause of climate change, according to experts. By recycling, communities are taking steps to protect the health and habitat of all living things.

Waste watchers

Major changes in markets, collection standards impacting industry, residents

By Tim Tedeschi | Published on July 11, 2019

While recycling has continually evolved over the last several decades, the industry is currently at a crossroads, according to industry officials.

Waste and recycling haulers, municipalities and other stakeholders nationwide are dealing with dramatic changes in recycling commodities markets due in part to China's recent increased restrictions and are fighting against contaminated recycling streams from consumers recycling improperly.

As recycling programs increased in popularity in the United States in the early 2000s and into the 2010s, the market's reliance on China as an export market for purchasing recyclable material skyrocketed.

Don Johnson, system development manager for Kimble Companies, said that by 2013, nearly 40 percent of the mixed paper and plastic recyclables collected in the United States were exported to China. In 2013, China implemented its "Green Fence" policy, which increased regulations on recyclable imports, and in 2018 China adopted the National Sword policy, which mandated that recyclables must have only 1 percent contamination or less to be accepted, Mr. Johnson said.

Contamination refers to loads that have non-recyclable items mixed in with recyclables or when recyclable items are put in the wrong bin.

"That's next to impossible to do," Mr. Johnson said of the 1 percent standard. "So what they're saying is they don't want any more of the material from the United States or Europe."

Rumpke Waste and Recycling Director Steve Sargent said China had previously announced restrictions that never came to fruition, but the country has followed through with the National Sword policy.

"When this was announced, our industry had heard other announcements in the past. We weren't sure this was for real, but it is," he said. "They have now in 2018 basically banned all the mixed paper shipments that we used to make there. They are making a stringent effort to reduce the imports, especially from the United States."

Mr. Johnson said even though the waste haulers in Ohio, including Kimble, Rumpke, Waste Management and Republic, send most of their mixed paper and plastics to businesses within the Midwest and were not reliant on exporting to China, states on the east and west coasts relied heavily on China's market and are now searching for places to send their recyclables. This has led to a dramatic increase in supply in domestic markets and lower prices across the industry for those selling recyclables.

"(Collector industry received) about $70 a ton for their mixed paper by March of 2018,"

Mr. Johnson said. “Prices have just dropped dramatically, terribly, and in March (of 2019) we were actually paying to get rid of our mixed cardboard instead of getting a return. That’s an $80 swing right there. It’s a tough situation right now.”

Mr. Sargent said Rumpke has always had a commitment to export less than 2 percent of its recyclables and finds most of its markets within a 300 mile radius of its collection areas. Many haulers nationwide, however, are dealing with challenges in transporting materials to markets, he said.

“In Lexington, Kentucky, they’re having trouble removing their paper so they’ve now removed paper from their collection program. So they have a movement problem,” Mr. Sargent said. “Can your recycling center sell or move the material that you collect and process?”

Mr. Sargent has been in the recycling business for almost 40 years and said he expects the industry to bounce back as more domestic markets open and the challenges of high supply, low prices and transportation are dealt with.

“Our company feels strongly about this that we’re going to have to go through this period of time that we’re going through to give these domestic markets time to develop and come online and create new demand for our domestic recycling programs,” he said. “We’ve got to change the way we’re doing business, and we’re going to have to develop and be more dependent on our domestic markets and that process is happening.”

Mr. Johnson said he is also confident that domestic businesses will continue to grow to accept recyclables so that communities that relied on China on the nation’s coasts can go back to successfully recycling rather than having materials stored up in warehouses or even, in some cases, eventually taken to landfills.

Many curbside customers engage in “wish-cycling,” where they throw things they think might be recyclable in their bins and hope that haulers can do something with them. Other customers simply use the recycling bin as a second trash bin, leading to high levels of contamination.

— Republic Services Recycling Coordinator Lisa Beursken

“It’s going to take some time because it’s very expensive to build plants and plastic plants and things of that nature. It will take time to get infrastructure in place to pick up the volume that had been going to China,” he said. “In any industry, when there’s an opportunity out there, we’re hopeful people will go out and do their research and make the investment to build the process and facilities to make the material.”

Problem of wish-cycling

In addition to the challenges the recycling industry markets face, haulers and solid waste districts are fighting against contamination at the consumer level, whether a community has curbside recycling or takes its recyclables to a nearby recycling drop-off center.

According to Cuyahoga County Solid Waste District Executive Director Diane Bickett, there are five main categories of recycling that should be placed in curbside recycling: aluminum cans; paper cartons for food and beverages like cream, broth and juice; glass bottles and jars; paper and cardboard and plastic bottles and jugs used for beverages, detergent, shampoo and more. Recycling categories are similar in Geauga County, although drop-off recycling centers no longer accept glass.

Recycling services are not consistent throughout Northeast Ohio. Some communities have curbside recycling with pickups at each house while others have centers to where residents drive and drop off items that can be recycled.

Republic Services Recycling Coordinator Lisa Beursken said many curbside customers engage in “wish-cycling,” where they throw things they think might be recyclable in their bins and hope that haulers can do something with them. Other customers simply use the recycling bin as a second trash bin, leading to high levels of contamination, she said.

“This is plastic, metal, they’ll figure it out,” she said of customers’ thinking when putting wire hangers, hoses, car parts, lawnmower blades and other non-recyclable materials in their bins. “Unfortunately, we can’t figure out what to do with it. Know what to throw, know what’s in your program,” she advised.

Mr. Sargent said while consumers’ bad habits contribute greatly to contamination, the recycling industry accepted higher levels of contamination due to such high demand before China closed its doors to mixed paper and plastics.

“So when there was more demand, then you could ship more material and sometimes those quality standards weren’t adhered to,” he said. “Now, when China backs out of the market and we’ve lost that much of a marketplace, then these quality standards have come into play and they have accelerated, so we now must meet very stringent requirements in our materials and that’s where we find ourselves today.”

Rumpke East Area Communications Manager Gayane

Three steps to proper recycling

Community recycling programs have been around for decades in many communities, and these programs are only as effective as the people who recycle. Learning how to treat common recyclables before depositing them into designated recycling bins can help people ensure their efforts are having the impact they intended.

1. Rinse containers

Items that are not rinsed before they’re placed in recycling cans run the risk of contaminating other recyclables.

2. Learn what’s recyclable

Contact your local recycling firm for a list of items that can and cannot be recycled. Many people unknowingly deposit items that cannot be recycled into their recycling bins, potentially contaminating their bins and rendering them more likely to end up in a landfill than a recycling center.

3. Inspect paper products

If various paper products are accepted by your local recycling center, you must still inspect them before placing them in your recycling bin. For example, a pizza box may be recyclable, but likely isn’t if it’s covered in grease.

Makaryan said customers don't realize that recycled materials are commodities that must have a viable market that can easily and affordably use the materials.

"Just because it has that triangle doesn't mean it's necessarily recyclable. For example, those plastic clam shells that berries and kiwis and produce come in at the grocery stores, those are not necessarily recyclable because there's really not an end user for it," she said. "The difference is the plastic we can recycle, bottles and drums, that's low mold plastic, so it's got a different melting point. It's really about finding an end user and finding a company that can repurpose that material."

Ms. Makaryan said plastic bags and batteries are especially dangerous contaminants, as they can cause major damage to the machinery at materials recovery facilities (known as MRFs) where recycled materials are processed and baled before being shipped to end-users.

"Plastic bags in our MRFs will end up getting caught in the wheels of the machines and then that slows down the process or we have to shut down the machine because plastic bags get caught," she said. "I had two fires in our recycling facility within 24 hours from batteries because folks think they can recycle them. Batteries need proper disposal, and we encourage everyone to check with solid waste districts for different plans and different drop-offs. You can't throw them away or in recycling."

Even when putting the correct recyclable items into bins or at drop-off centers, residents need to make sure their items are clean, Ms. Makaryan said. Putting in a jar of peanut butter or pasta sauce that has not been rinsed out leads to food waste contamination. Ms. Bickett said it is helpful to remember that recyclables turn into products.

"Recyclables are commodities like everything else," Ms. Bickett said. "They need to be clean. You wouldn't want to buy a dirty piece of something. They're commodities, not garbage."

Mr. Johnson said consumers have gotten into bad habits of not being conscious of what should and should not go into their recycling bins. Waste haulers, municipalities and solid waste districts are all working to better educate citizens on best practices in curbside and drop off recycling, he said.

"Go on the website of your community or service provider and see what should be put into the receptacle. Keep contaminants out. Contaminants are tremendously high on curbside programs," he said. "Solid waste districts across Northeast Ohio that I deal with are working very, very hard, as well as community organizations, to educate and promote quality recycling, as are our employees at Kimble and competitors.

"We're all working hard to get contamination rates down. In marketing the material in the U.S., they don't want contamination either."

Ms. Bickett said the solid waste district seeks to educate on how to recycle properly at home; alert residents to specific items like computers, scrap metal, shredded paper and clothing that can be recycled outside of the curbside programs and promote areas where consumers can reduce their overall consumption of products. The district's website, www.cuyahogarecycles.org, provides a wide array of information including a breakdown by community in Cuyahoga County. ♻

Technology, habits change how the world recycles

By Tim Tedeschi | Published on July 11, 2019

While recycling right from our curbs is a fairly recent phenomenon over the last two decades, the practice of turning waste into a reusable product in some form or another can be traced back to ancient civilizations.

According to archaeologists and historians, ancient Egyptians reused papyrus documents as mummy wrappings for burials, ancient Romans recycled broken pottery into flooring and the first instance of re-pulping used paper into recycled paper occurred in 11th century Japan.

Recycling practices continued in various ways throughout the centuries, and at the turn of the 20th century, Cleveland and Chicago were the home of the first American aluminum recycling plants. Northeast Ohio has continued to be a hub for scrap metal recycling, Cuyahoga County Solid Waste District Executive Director Diane Bickett said.

"Recycling's roots are deep here in Cuyahoga County because of our industrial and steel-making heritage," she said. "Collecting scrap metal to feed steel and aluminum mills was an early recycling enterprise that continues to this day."

In the 1940s, America's involvement in World War II spurred increased recycling efforts with scrap drives collecting metal, rubber, nylon, kitchen fat and more, according to Ohio History Connection. Ms. Bickett said the post-war economic boom and the increased ubiquity of plastic in the 1950s and 1960s increased obsolescence packaging and normalized throwing all waste in the garbage without a second thought of where it would go next.

Ms. Bickett said the escalation of landfilling, air pollution, pesticide use and dumping into local streams, rivers and lakes in the 1960s was brought to the national forefront in June of 1969 when the Cuyahoga River caught fire. The attention-grabbing fire contributed to the creation of the U.S. Environmental Protection Agency and passage of the Clean Air Act in 1970 and the Clean Water Act's passage in 1972.

"Before the Clean Air Act, many homes had their own incinerators if you can believe that," Ms. Bickett said. "Think of all the air pollution caused by people burning their own trash in their homes."

The increased restrictions on dumping and polluting water supplies and air quality gradually effected change across the country, Ms. Bickett said, and Ohio passed solid waste law House Bill 592 in 1988 that became the catalyst for coordinated recycling efforts in the state. The law increased waste reduction and recycling statewide; adopted federal standards for how landfills should be constructed, designed and maintained to prevent pollution and required all Ohio counties to form solid waste management districts made up of single counties or groups of counties.

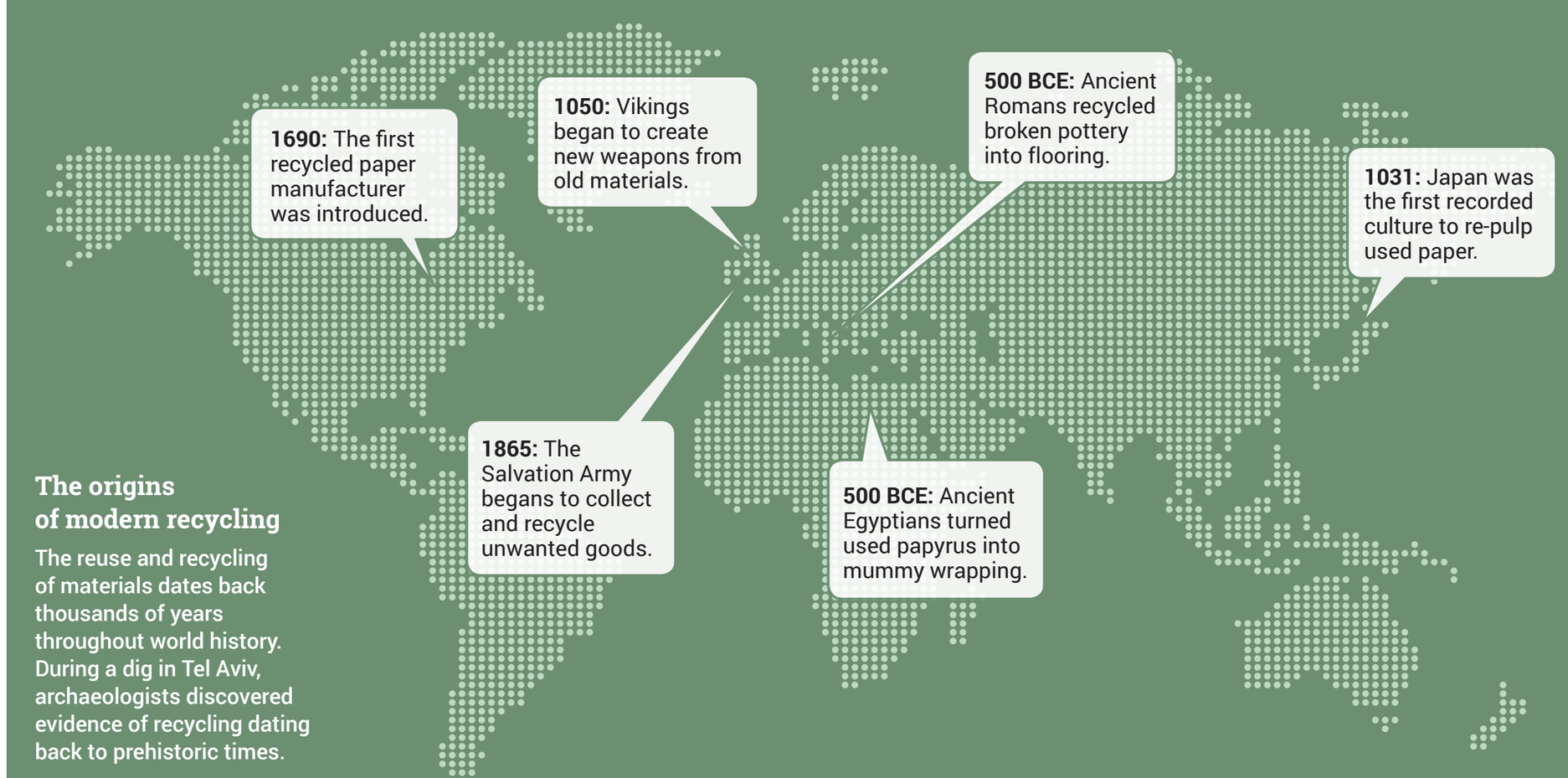
Cuyahoga County has its own district while Geauga and Trumbull counties with smaller populations created one district together.

"The purpose of districts initially was to write a solid waste management plan for the district, have it approved by the EPA and then implement the plan, and plans themselves had to comply with the state format and meet certain state waste reduction goals," she said. "Those waste reduction goals in a nutshell were a 25-percent recycling rate for residential and commercial waste and then a 66-percent recycling rate for waste generated out of manufacturing facilities, industrial waste."

Before HB 592, a few communities in Northeast Ohio including Shaker Heights and Cleveland Heights had municipal recycling programs, but the vast majority of recycling efforts were community paper or aluminum can drives to raise money for organizations like Boy Scouts, said Rumpke Waste & Recycling Director of Recycling Steve Sargent.

Mr. Sargent said one of the biggest advancements in recycling from the early 1990s to today is the onset of curbside recycling programs. All but one of the 59 municipalities in Cuyahoga County collect recycling at residents' homes through service department collection or contracts with waste hauling companies, Ms. Bickett said. While a few Geauga County municipalities offer a single waste hauler, the majority of county residents can individually contract with waste haulers for trash and recycling curbside services or take their recyclables to drop off centers operated by the Geauga Trumbull Solid Waste District.

Kimble System Development Manager Don Johnson said curbside recycling in the 1990s into the early 2000s was often collected in large blue plastic bags or laundry-style 18-gallon bins, with glass, plastic and aluminum separated from newspaper and other papers in what was called dual-stream recycling.



The origins of modern recycling

The reuse and recycling of materials dates back thousands of years throughout world history. During a dig in Tel Aviv, archaeologists discovered evidence of recycling dating back to prehistoric times.

Recycling throughout American history

Recycling began to make its way to America near the end of the 17th century. The first manufactured recycling process, which used cotton and linen to create paper, was introduced near Philadelphia in 1690. From this point forward, major historical events dictated how the U.S. used, disposed of and reused materials.

1800s: **The Industrial Revolution** brought about cheaper goods which made consumers more apt to throw things away more frequently.

1897: New York City opened a facility where materials like paper and metals are sorted out of the trash for recycling.

1904: The first American aluminum recycling plants opened in Cleveland and Chicago.

1916-1918: **World War I** brought about shortages of raw materials. The Waste Reclamation Service was created by the government with the motto "Don't Waste Waste – Save It."

1930: **The Great Depression** turned recycling from a good deed to a survival tactic as many peddled scraps to make ends meet.

1940: **World War II** called for the support of Americans by recycling metal, rubber, nylon, kitchen fat, etc. through scrap drives.

1950s: **Post-war economic boom** lead to increase in plastics and obsolescence packaging. People threw everything away without thinking about it.

1969: **The Cuyahoga River caught fire,** sparking national outrage about the state of the enviornment.

1970: The Environmental Protection Agency was formed and the Clean Air Act was passed.

1988: Ohio passed House Bill 592 establishing solid waste districts and giving more restrictions on landfills.

1990s-2000s: Dual stream recycling with paper and cardboard was collected separately from plastic, glass and aluminum.

2000s-Present: Automation and compaction increased efficiency in collection, and collection shifted to single stream with all recyclables collected together.

"Back then (material recovery facilities) were a lot of manual work where they'd break open blue bags, look at material and separate material by hand, except steel was pulled out by a magnet and aluminum pulled out by eddy current," he said. "The rest was manual, very tedious, a very slow process, but you didn't have a whole lot of contamination because the driver could see it at the curb."

From the early 2000s to today, curbside recycling has continued to evolve with automated truck arms dumping bins into the truck both for trash and recycling, which cuts down on the labor-intensive collections for workers, and increased compaction capabilities that allow trucks to carry more materials more efficiently, Mr. Sargent said. Advancements at material recovery facilities have also led glass, plastic, aluminum, paper and cardboard to all be collected in a single bin in a process known as single stream recycling.

Ms. Bickett said while single stream recycling has its advantages in increased efficiency and safety for workers, having every recyclable material in one bin contributes to contamination and wish-cycling, where consumers toss whatever they think could be recycled into the bin even if it's not listed in their waste hauler's program.

"Carts allow people to throw all sorts of things that shouldn't be there, and people are not breaking down boxes or [are] putting the wrong things in the cart," she said. "The comingled single stream system is expensive to sort out contamination and the (processing) plants really are only designed and engineered to take certain items."

Mr. Sargent said while it isn't perfect, he expects single stream recycling to continue for the foreseeable future due to transportation constraints.

"We don't see more drivers available so we're going to have to continue to focus on keeping that cost of collection at the minimal for our business," he said. "So for one, transportation will always play a large role in the cost of recycling. That's why we think single stream will stay with us because you can pick the product up, consolidate it together, you can compact it."

As the recycling industry faces a crossroads with a fight against contamination and a search for more domestic markets due to China's recent policies rejecting the majority of imported recyclables, developments could include increased automation and an overall effort to use less plastic.

Mr. Johnson said optical sorters and other robotics technology combined with increased education and consumer awareness of what can and cannot be thrown into curbside recycling will move the industry forward. Creating packaging made of less or more simple plastics that are more easily recyclable will also be an important step, he said.

"I am confident in the ingenuity of the human spirit and American people and in the general public to wake up and start looking at websites, what goes in and what doesn't go into that cart," he said. "I feel confident that it'll get back to where it was four or five years ago and that new technology will get better and be a stronger part of our lives."

Ms. Bickett said while companies need to commit to make more simple recyclable containers and reduce plastic use, consumers can also contribute by avoiding single-use plastics like straws or plastic ware.

"If it's not on their radar screen, it should be because plastics are entering our waterways and food chain at a remarkably scary rate, and plastic manufacturers are talking about doubling the amount of plastic they produce," she said. "We have pouches now where you can buy sour cream in a pouch. I can't recycle a pouch; it's made out of six different materials."

Mr. Sargent said even though the past five years has brought the most change at a faster pace to recycling than any other time in his 40-year career in the business, he is encouraged that consumers and the industry alike are committed to improving recycling practices.

"I've seen more interest today to start new programs at the same time that we're having the most difficult time in the last 10 years with the valuation and the markets. You see more interest today, more of a commitment," Mr. Sargent said. "There's not a lot of new landfills being built in this country today, but we still have a lot of material that can be recycled going into those landfills. So I still see the commitment of recycling being there, we're just going to have to change the way that we go about doing that."

Cuyahoga sets standard with curbside collections

By Julie Hullett | Published on July 11, 2019

Though recycling has become a way of life in Cuyahoga County, recent changes in the types of materials accepted, how they are collected and costs make constant communication with residents key to the process.

Diane Bickett, executive director of the Cuyahoga County Solid Waste District, noted that 58 municipalities have curbside recycling collecting the same types of materials. That's every community in Cuyahoga except Richmond Heights, she said.

"It's unusual to have such a broad service provided throughout the county. We're so urbanized and it makes sense to provide that," Ms. Bickett said. "That's why we don't have a series of drop-off locations." Most communities provide bins to be picked up at the curb while a few, including Gates Mills, Hunting Valley and Pepper Pike, have trucks going up residential driveways to make the collection.

"It's efficient and there's more participation," she said of at-home collections.

Ms. Bickett noted two major distinctions between Cuyahoga and Geauga.

Cuyahoga local governments, mostly cities and villages, take care of recycling services for their residents, Ms. Bickett said. The county has only two townships, Chagrin Falls and Olmsted. Geauga, with many townships, villages and just one city (Chardon), in most cases looks to residents to arrange and pay for recycling services. Some residents take their recyclables to collection centers in Geauga.

In Cuyahoga, most local governments pay for recycling from their general fund, which Ms. Bickett said is unique to Ohio. Other states treat the cost of recycling like a utility that residents pay for directly, she explained. Bentleyville, Chagrin Falls Township, Village of Chagrin Falls, Hunting Valley, Moreland Hills, Orange Village, Pepper Pike, Solon and Woodmere either collect their own recyclables or contract with a hauler to collect them.

Gates Mills arranges the contract, but the residents are billed directly, Service Director Dave Biggert said.

Local governments either collect recyclables or contract with outside companies.

Moreland Hills, Pepper Pike and Woodmere use their municipal service departments to collect trash and recyclables. These three communities are part of the Cuyahoga County Solid Waste District Recycling Processing Consortium, through which Kimble Recycling and Disposal company accepts the collected recyclables. Municipalities are paid a minimal amount for the recycled material depending on Kimble's processing costs.

Solon also uses its service department for recycling.

Recycle correctly, or it's off to the landfill

How many pieces of plastic or plastic bags can be spotted in this photo? When recyclables are not disposed of appropriately, they wind up in landfills. Unlike other garbage, it takes 10, 20, even more than 400 years for some types of plastic and aluminum to completely decompose.

Bentleyville and Hunting Valley contract with Waste Management for recycling while Orange, Chagrin Falls Township and Village of Chagrin Falls contract with Kimble. Gates Mills contracts with Rumpke.

Chagrin Falls village Superintendent of Streets John Brockway said that the price to recycle is rising. This is the first year that the village has paid a recycling processing fee, he said, which is $35.16 per ton. "If the cost [to recycle] goes higher than the cost to discard the material, then it will come before Village Council to gauge interest in continuing to recycle," he said. The cost to discard waste is $42 per ton, Mr. Brockway said.

Curbside recycling

So, what can Cuyahoga County residents put in their bins? Cans, cartons, food glass containers, glass beverage bottles, paper, cardboard boxes as well as plastic bottles and jugs are accepted. Containers must be empty and rinsed with the cap replaced on cartons, glass and plastic bottles and jugs (but not cans).

Ms. Bickett said the county currently is only accepting plastic bottles and jugs where the neck is more narrow than the rest of the container.

The Chagrin Valley communities have single stream recycling, meaning that all of these items can be mixed together for curbside collection. The exception is Gates Mills, where paper and cardboard must be bundled separately from other recyclables.

Contamination can be a problem, said Moreland Hills Service Director Ted DeWater. That's when residents engage in wish-cycling by placing items in the bins that cannot be recycled such as garden hoses or plastic playgrounds.

"A big issue is that you can tell them what is and isn't recyclable, but sometimes they want to help and put stuff in the cart that isn't recyclable," Mr. DeWater said.

Moreland Hills places compliance tags on recycling carts for residents who consistently break the recycling rules. Recycling carts with a tag may be collected as garbage instead of recycling, he said.

Single-use plastic grocery or retail bags also contaminate material in recycling bins, said Orange Village Service Director Bob Zugan. Plastic bags are recyclable, but not for curbside pickup bins. The bags tend to get tangled in the separation equipment at recycling process plants, he explained. These bags are accepted for recycling at stores including Heinen's, Giant Eagle, Target and Kohl's.

Hazardous waste

Cuyahoga County Solid Waste District Program Manager Cristie Snyder said that communities collect household hazardous waste at drop-off locations. This includes oil based paint, solvents, used motor oil, automotive fluids, aerosols, lawn and garden products, pesticides, pool chemicals and household cleaners. Once collected, municipalities take these materials to the district's special waste convenience center in Garfield Heights.

Ms. Snyder said that the district pays ChemTron to collect hazardous waste. The price varies depending on the material. Oil based paint, for example, is 20-cents to 30-cents per pound, while a cylinder grill tank could be $100 to $150 per tank. The materials end up at different locations, she said, with some items going to Ross Environmental Services, an incinerator for pesticides in Elyria.

Most Cuyahoga communities do not have paper bins because of the single-stream curbside service. Pepper Pike and Gates Mills are the exceptions. Revenue from the Gates Mills paper bins goes to the Gates Mills Land Conservancy. Pepper Pike has a Carauster bin near City Hall that only accepts cardboard. In 2015, Pepper Pike received $2,848 in revenue from the bin, Service Director Robert Girardi said. In 2018, the city had to pay between $210 and $260 per week to have the materials removed. From April to May of 2019, Pepper Pike received $28.28 for 12,000 pounds of cardboard recycled in the bin, he noted. ♻

How to recycle

In Cuyahoga County, 58 of the 59 communities have curbside recycling programs. The items that are collected are consistent in every community and include cans, cartons, glass, paper and boxes and plastic bottles and jugs.

IN HOME RECYCLING
These items can be placed in curbside recycling bins.

- **Cans** — Pop, beer, tuna, cat food, soup
- **Cartons** — Milk, juice, soup, broth, wine, etc.
- **Glass** — Food or beverage bottles, jars, etc.
- **Paper & boxes** — Cardboard, mail, office paper, etc.
- **Plastic** — Water, soda, shampoo, detergent, milk

OTHER RECYCLING
Some items can be taken somewhere to be recycled, reused or donated.

- **Plastic bags** — Grocery, zip close and product wrap
- **Electronics** — Desktops, laptops, printers, tablets
- **Clothing** — Clothing, coats, fabric, textiles
- **Household goods** — Linens, furniture, kitchen utensils
- **Propane tanks** — Blue Rhino offers free recycling

PROPER DISPOSAL
Take precautions when disposing of potentially harmful materials.

- **Latex Paint** — Dry out before placing in trash.
- **Needles/ Syringes** — Seal in container before disposal.
- **Medicine** — Find a Drug Drop Box to dispose.
- **Hazardous waste** — Check programs for safe disposal.
- **Fluorescent Bulbs** — Check with home improvement stores.

LANDFILL ITEMS
These items cannot be recycled and should be placed in the trash.

- **Styrofoam** — Food grade trays, cups and containers
- **"Tanglers"** — Ropes, cords, hoses, wires, etc.
- **Single-use cups** — Coffee, fast food and party cups
- **Durable Plastic** — Toys, furniture, buckets, hangers
- **Ceramics/ Glass** — Dinnerware, mirrors, windows, crystal

Disposal of **REUSABLE**, **HAZARDOUS** and **LANDFILL** items listed above are relevant in both counties.

In Geauga County, some municipalities offer residents the option to pay for a curbside recycling program. The five items listed in green, below, can be placed in bins provided by private curbside programs. There are also drop off locations for residents to take their reyclables if they do not pay for curbside.

If it doesn't go in the bin, where does it go? The items listed under the blue and yellow bins should not go in the trash or recycling bins. There are plenty of local drop-offs that accept these items for donation or disposal.

Plastic bags
Check with local stores listed below to confirm they accept.
- Heinen's
- Giant Eagle
- Lowe's Home Improvement
- Marc's
- Target
- Walmart
- Kohl's

Clothing & Furniture
- Chagrin Falls Park Community Center in Chagrin Falls
- National Council of Jewish Women, Thriftique Showroom in Warrensville Heights
- WomenSafe Resale Shoppe in Chester
- Goodwill in Mayfield Heights
- Habitat for Humanity, Geauga Co. Restore in Newbury
- Geauga Humane Society's Rescue Village in Russell

For more locations:
cuyahogarecycles.org/clothing
www.gottagogreen.org/copy-2-of-battery

Household hazardous waste
Geauga Trumbull Solid Waste
Location: 5138 Enterprise Dr. NW Warren, OH 44481
Hours: Check the waste district website for collection date updates.
Contact: 330-675-2673
List of acceptable items: www.gottagogreen.org/hhwrf

Cuyahoga County HHW Disposal
Locations: Each city/ village offers Household Hazardous Waste and electronics drop offs at the local service department
List of acceptable items: www.cuyahogarecycles.org

Medications
Local police departments:
- Chagrin Falls
- Chardon
- Chester Township
- Gates Mills
- Geauga County Sheriff's Office
- Hunting Valley
- Moreland Hills
- Orange Village
- Pepper Pike
- Russell Township
- Solon
- Woodmere

Rural Geauga County mostly depends on drop-off recycling centers

By Samantha Cottrill | Published on July 11, 2019

Recycling for many Geauga County residents involves loading up their cars and driving to a drop-off center. With 16 townships, five villages and one city, curbside recycling is not the norm in this county.

Lisa Smith, administrative assistant of the Geauga Trumbull Solid Waste District, confirmed that residents mostly rely on the drop-off centers. That's different from surrounding counties like Cuyahoga, which is dominated by door-to-door collections.

But like surrounding counties, Geauga faces many of the same challenges including changes in recyclable materials accepted and increasing costs.

The district that oversees recycling in both Geauga and Trumbull counties contracts with Ohio Valley Waste, headquartered in Youngstown, Ohio, to haul recyclables from the centers on a per-tip charge.

Ms. Smith said the district has a three-year contract with Ohio Valley Waste, or OVW, that ends Dec. 31 of this year (2019). Cost is based on tips with the price per tip at $22.50 in 2017, $23.18 in 2018 and $23.88 in 2019.

OVW sales specialist Mike Aey explained that a tip is "just the dumping of the Dumpster into our truck. Every time when you pick up the box and dump it into one of our front-end loaders, or garbage truck, that's a tip."

Recycling by community

Four Geauga communities have their own curbside programs in place, Ms. Smith said. The City of Chardon, Hunting Valley Village and Burton Village all contract with Waste Management for communitywide curbside or back-door recycling. Middlefield Township contracts with Rumpke for a similar service. Geauga County's remaining communities either use the district's drop-off centers or residents subscribe to curbside recycling on their own, she said.

Chardon's citywide curbside recycling just kicked off this past June.

Chardon Community Development Administrator Steve Yaney said the decision to provide curbside recycling came up after conducting a survey about two years ago revealing that 70 percent to 80 percent of residents wanted the city to find a way to control the costs of trash hauling.

"What the city did was we started going through the single trash hauler model, and

during that timeframe, council decided that it was important to offer recycling along with trash" pickup, Mr. Yaney explained.

He said that the city's recycling alternates every other week for the residents, with collection on the north side of Chardon one week and collection on the south side the next week. Trash is picked up every week, he said.

He confirmed that because the city contracts with Waste Management, residents are able to recycle glass through their curbside programs, too. Glass is not currently accepted at the drop-off centers.

Chardon does not have a drop-off center, Mr. Yaney said, but there is one in the county offices' parking lot at 470 Center St., and another in Chardon Township by the Township Hall, 9949 Mentor Road.

In contrast, South Russell Mayor William Koons explained that residents are responsible for trash and recycling services.

"The government municipality does not get involved in any trash or recycling. It's all by individual homeowners," Mayor Koons said. He explained that the village uses this method because, "I think it's just been that way forever. We're kind of

Why proper recycling is important

The recycling drop-off center in Bainbridge Township, above, was filled with non-recyclables last year after furniture, a mattress, a bicycle, trash and other noncompliant items were dumped at the site. Community drop-off recycling centers in Geauga County and other locations can save residents money by not having to subscribe to a curbside program. But offenders who dump trash and other items put these centers in danger of being closed. If not utilized correctly, local governments have to spend money to clean up and police the sites.

a pipe along the highway here, kind of a limited government mentality.

"Frankly, it is an emotional issue," he added, explaining that village residents prefer having the freedom to choose their own hauler for both trash and recycling. He said the village does not plan to change this method because it is what most residents prefer.

South Russell does not have a drop-off recycling center. If residents choose not to subscribe to curbside recycling, the closest district drop-off site is located at the Russell Township Maintenance Building, 14921 Chillicothe Road.

Jim Stanek, service director of Bainbridge, said residents of the township utilize a drop-off recycling center administered by the waste district, which is emptied three times a week on Monday, Wednesday and Friday.

He said the district sets the rules and takes care of all of the recycling for the center.

"We're just the middle man," Mr. Stanek said of the township. "We provide an area for (the district) to host their bins."

Mr. Stanek explained that the township does not offer curbside recycling to its residents because the "township doesn't have those kinds of funds." Cities and villages tend to collect more taxes than a township, he said, so the option is not in the Bainbridge budget.

The drop-off center works well, and Mr. Stanek said he does not see the township needing to implement a curbside program. Those interested could check with their private trash hauling subscriptions to check if they can include curbside recycling, he said.

Mr. Stanek said the township does what it can to police the center to prevent dumping and explained that he can view the center by camera from his desk. Most residents are "ardent recyclers."

"Honestly, right now this has been just a minor headache for us. Sometimes people bring things [to the center] that they're not supposed to bring there, and there are times that we have to get rid of the things that were illegally dumped on us."

— Jim Stanek, Bainbridge service director

"Honestly, right now this has been just a minor headache for us," Mr. Stanek, said explaining that while there are cases of dumping, most residents follow the rules. "Sometimes people bring things [to the center] that they're not supposed to bring there, and there are times that we have to get rid of the things that were illegally dumped on us."

Despite the few hiccups, Mr. Stanek explained that the center is easier to manage for the township than having a "full blown [curbside] program."

Bainbridge also has a contract with River Valley Paper, Mr. Stanek said. "They actually pay us for our paper." He said that while the market for the paper is not as good and that the township does not get as much money from the paper as they used to, "it's still an outlet for the people to get rid of this stuff. It's going to be recycled and we're getting paid for it. So that's all good."

Chester Township's recycling is similar to Bainbridge; however, Chester owns its own drop-off facility, Chester Recycle Park, located at 12535 Chillicothe Road. Trustee Joe Mazzurco said the township has been researching curbside programs.

"It's our own facility, but we work with them (the waste district)," Mr. Mazzurco said. He explained that the district gets guidance on guidelines and signage for the site. The park is open 24 hours a day, seven days a week, unless the bins are full. "Our recycling, it's open and it's an honesty program. People are allowed to drop off recyclables," he said.

"There is no curbside," Mr. Mazzurco said. "There are a lot of areas around us that have gone to curbside." He added that the township will "be doing some research" on curbside recycling programs, but the drop-off site is the only recycling "Chester does offer as a township."

Mr. Mazzurco explained that residents can choose to subscribe to their own curbside program. Waste Management offers subscriptions to Chester residents, he added.

As to what method of recycling residents prefer, Mr. Mazzurco said it's 50/50. He said he gets calls from some residents thanking the township for having an open facility, and then "there are some residents that want it to go away and use the area for other alternatives.

"It helps the taxpayers that do the honor system and the processes right. It saves them money," Mr. Mazzurco said as a benefit for the township's current recycling program. He added that a con to this method is the issue with people not utilizing the sites properly.

"We have had to have our road departments every so often go up there and clean up stuff that people put up there when the bins are full," he said. "We have had our area police go out more with the officers of the township, so that has slowed some of them down.

"It's a process that the people need to follow," he added, referencing that drop-off sites can get shut down if not utilized properly and that it is important for people to take the time to read the signs at the facility to fully understand what is and is not accepted. "We've looked into gates and cameras, but you know, there's a cost associated with that."

Why not glass?

Ms. Smith explained that the district's contract with Ohio Valley Waste is why their drop-off locations are unable to accept glass recycling.

"Ohio Valley Waste sent a letter [in June of 2018] to the director at the time, Greg Kovalchick, that if they were to continue taking glass they would up the pull rate to $50 per pull," she said, meaning OVW would have more than doubled the price per tip in order for the county to continue recycling glass through the drop-off bins. OVW indicated that it was unable to market glass, Ms. Smith explained.

"We are in the process as a company on phasing glass out of our single stream process," Mr. Aey said, explaining that there are fewer end-users and high contamination risks, which hurts the company's ability to market the glass. "For some companies to be able to pull the glass out of the system, get it cleaned up to a point where an end user

would take it and then ship it, [the companies have] now lost thousands of dollars just on those tonnages."

He added that the shattered glass also wears on the company's equipment, and with stricter quality requirements on recyclable materials, Mr. Aey said, OVW does not market off of fiber, newspaper, cardboard and other mixed paper as well as they used to with glass contamination to cover operating costs.

Ms. Smith explained that the district will be sending out bids for a new contract in mid-October "so we can have a new – or the same – company under contract by January 2020.

"In October we'll send out a proposal or packet to haulers in both counties (Geauga and Trumbull) to see if we can get some bids. Hopefully whoever gets it will have glass in their program. That will be a big sticking point for us," Ms. Smith said.

Ms. Smith said that the waste district's goal is to process as much recyclable materials as possible.

In the meantime, Ms. Smith said people should contact their curbside programs to see if they can recycle glass. Waste Management, Rumpke, Kimble and Republic Services, which service different areas across Geauga County, still accept glass in their curbside programs. ♻

Solon is the leader in community recycling

By Sue Reid | Published on July 11, 2019

Considered both a pioneer and leader in the field, the City of Solon began a recycling program as far back as the late 1980s.

"We were one of the first communities to get into recycling at the level that we did," Service Director Thomas Bandiera recalled.

Solon began its first recycling program in house under the direction of Ed Butler, who was brought in to launch a program that the city had never had before, Mr. Bandiera explained.

It was a very "hands-on program" in that the city had its own material handling service right at the Service Department on Cochran Road, he noted.

The process back at that time involved workers going out on the road and collecting recyclables that were placed in individual clear bags.

"It was a single sort program, meaning that everything was separated in its own individual bag," Mr. Bandiera explained.

That included plastics, tin cans, aluminum cans and glass.

"We would collect it with a trailer in front of their home on collection day and sort it all right here at the service department," he said.

Solon's material handling facility had the machinery to do so, including its own glass crusher, baling machine for all the aluminum and tin cans as well as for the paper.

"It was a very labor intensive process," Mr. Bandiera said. "What companies do now, we were doing at our own material handling facility."

The early days of recycling in Solon would also involve residents going to local stores and purchasing the clear plastic bags that were used. Those bags were placed inside wire frame bins at their home.

"It was definitely a different way of doing business for the city," Mr. Bandiera said. "It was in its infancy and the talk of the town and very well received.

"The numbers only went up," he said.

As time went on, Solon expanded the variety of machinery at its material handling facility, including purchasing a new glass crusher that would do the glass by color, including clear, green and brown. It would contain all those items and crush it, Mr. Bandiera explained.

As the months went on, recyclables continued to pile up at the facility, including aluminum, tin and paper. City crews would watch the recycling market, and sell the items to local recycling vendors, who would come in, weigh the collections and then pay for the items, Mr. Bandiera said.

Mr. Bandiera said he is unsure what the proceeds were at that time, but noted primarily the importance of keeping these items out of the waste stream that end up in landfills. The city must pay in order to dump garbage in landfills.

"The offset of recycling is two-fold," he said. "You are getting money for the recycled product, but then also keeping it out of the landfill and not paying tipping fees."

A single sort program processed at Solon's own facility continued into the mid-1990s, before the city began a "co-mingled process," Mr. Bandiera said, as it was often cumbersome for residents to separate items into their own bags.

With the switch to a co-mingled process, residents would put all their recyclables in one bag, which meant a more labor intensive process at the material handling facility, Mr. Bandiera explained.

"Participation rates increased significantly, but we couldn't keep up with volume," Mr. Bandiera said.

At the service department was a compartmentalized recycling trailer so each individual bin would hold different products, including aluminum, tin, plastic and paper.

As volumes continued to increase, Solon decided to eliminate its material handling facility, Mr. Bandiera said.

Instead, those items were picked up with a rear loader recycle truck instead of the trailers. Solon contracted with Waste Management and transported the materials to the company's handling facility in Oakwood Village.

"We would weigh the truck, dump it and then we had negotiated price at the time they would pay us for products," he explained. "There was a rebate the city would get back from the co-mingled products we dumped at the recycling station."

He added that, for a while, the city was not paying anything to offload their recycled products at the recycling transfer station. It was only after a while that the city negotiated a rebate Solon would receive back on the materials that could be recycled.

"This represented phase one of our recycling program," he said, "and the introduction to general recycling in the city.

"We were changing with the times and taking advantage of the technology that was available," he said. "Automation would be the next logical step." ♻

A worker at the Republic Services Materials Recovery Facility in Oberlin removes a plastic bag contaminant from the recycling stream. While not included in most community programs, plastic bags can be recycled separately at local stores and turned into decking material and other products. (Photo by Geoff Powers)

Businesses facing increased costs with upcoming switch

By Julie Hullett | Published on July 18, 2019

The future is looking cloudy for business owners across greater Cleveland impacted by local bans on single-use plastic bags. With a ban currently in place in Orange Village and a Cuyahoga County ban set to begin on Jan. 1, store owners are searching for ways to keep their costs down and their customers happy.

Jeff Heinen, co-owner of Heinen's Fine Foods, said that the Cuyahoga County plastic bag ban will substantially increase costs for the company because plastic bags are 2-cents each and paper bags are 11-cents each.

"A plastic bag ban is concerning to us as a business because paper bags cost five to six times more than plastic bags, which results in a $2 (million) to $3 million increase in our overall costs – an expense that many of our competitors in the online grocery retail and restaurant industry will not incur," a May 30 post on the Heinen's Facebook page stated.

How do plastic bags harm wildlife?

They can make animals sick or cause fatal injuries.

Sea turtles often eat plastic bags, thinking they're jellyfish.

A beached whale was once found with 20 square feet of plastic in its stomach.

One marine bird was found dead with 17 plastic bags in its stomach.

Seals, sea lions and dolphins have been found trapped in plastic waste.

Heinen's has 11 locations across Cuyahoga County, including stores in Chagrin Falls, Cleveland, Mayfield Village, Pepper Pike, Shaker Heights and University Heights.

The Cuyahoga County ordinance bans disposable plastic bags and non-permitted paper bags in retail establishments at the point of sale for transporting goods. A permitted paper bag must be made from at least 40 percent recycled content and be 100 percent recyclable.

Although the law does ban disposable plastic bags, it allows for exceptions, including newspaper bags, prescription drug bags, dry cleaning bags and bags used to wrap meat and flowers when purchased, according to the ordinance.

State action

But there could be a challenge from state lawmakers to the local prohibitions.

State Rep. George Lang, R-West Chester, and Rep. Don Jones, R-Freeport, introduced House Bill 242 on May 13, which would block local plastic bag bans. The bill states that people may use auxiliary containers (plastic bags) for commerce, which would include receiving a bag at the point of sale at retail establishments.

In addition, the bill explicitly states which types of governments the block on plastic bag bans would be applicable to, and it names charter governments, such as Cuyahoga County, and townships and municipalities. Therefore, the county ban and the ban in Orange Village could be blocked. The State and Local Government Committee gave a report on June 27.

Mr. Heinen said that the business understands the environmental concern with plastic bags, but banning plastic bags is not an effective solution. Some experts say that paper bags have an equal or greater impact on the environment as plastic, he said.

"Plastic bags account for less than 1 percent of plastic waste," Mr. Heinen said. "The way we view it is that the problem isn't really about plastic versus paper, it's about how we get people to use reusable bags more frequently. The solution should be aimed at that."

Come Jan. 1, Mr. Heinen said the locations in Cuyahoga County will offer only paper bags and reusable bags. Plastic bags still will be offered at stores in different counties, he said, including the Heinen's locations in Chardon and Bainbridge, both in Geauga County.

Mr. Heinen said that his business supported Cuyahoga County Council's 2017 legislation that proposed a 10-cent fee on plastic and paper bags because it gave customers the choice to pay for bags or not.

Money-saving measures

Steve Presser, co-owner of Sweeties Big Fun located at Pinecrest shopping center in Orange Village, was supportive of the April 1 ban.

"We're pretty environmentally conscious and feel that Orange Village did a good thing to try to save the environment, but there is a cost to the businesses," Mr. Presser said.

Sweeties Big Fun sells a combination of toys and knick knacks from the Big Fun and candies from b.a. Sweetie Candy Company. Mr. Presser said that customers typically prefer bags with handles, which makes paper bags even more costly. He said that a plastic bag held the vast majority of the items that the store sells and cost 3-cents each. A paper bag with handles, depending on its size, could cost between 15-cents and 25-cents per bag, he said. He estimated that the store hands out 30,000 bags per year.

With the significant increase in cost, Mr. Presser said that he is trying to be creative when buying paper bags such as looking for overruns or closeout sales. The store is using six different sizes of paper bags now, three of which have handles.

The impact of plastic bags on the environment

One of the largest forms of pollution that wreaks havoc on the environment today is plastic pollution. Unlike plastic containers, plastic bags are a bit more difficult to recycle and must be disposed of properly to do so.

How do plastic bags harm the enviornment?

In one year:

1 trillion

plastic bags are produced around the world.

3.5 million

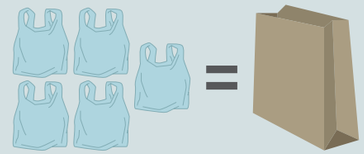
tons of plastic bags are discarded.

4.3 billion

gallons of crude oil are used to make plastic bags.

Why haven't plastic bags been eradicated?

Cost. Heinen's, for example, expects to pay an additional $2 million to $3 million a year to use paper instead of plastic bags. For the cost of one paper bag, stores could use five plastic bags.



SOURCES: National Geographic, U.S. Environmental Protection Agency, Heinen's

At this point, Mr. Presser said that the store will absorb the increased cost, but is not sure what will happen in the future. He said that the employees ask the customer if they want a bag, which are free right now, but the cost may be passed on to the customer in the future. He also said that it is important to educate customers about the benefits of carrying reusable bags.

"We hope the public gets to the point to realize that [the ban is] good and they'll bring their own bag," Mr. Presser said. "We feel the public has to step up and become more conscious."

Changing habits of customers ultimately will help the environment and save businesses money, he said.

Even paper bags have a drawback, he said. They get soggy in the rain, Mr. Presser said, adding that reusable bags could solve that problem.

"I applaud Orange for being the first ones coming forward and making this proposal," he said. "Plastic bag waste is very apparent if you look at the waterways and roads. If it protects the environment, I'm all for it. This will be a good learning process for businesses and consumers."

Others ready for change

Other grocery chains, including Giant Eagle, would be affected by the Cuyahoga ban.

"We are working to understand the impact of Cuyahoga County's legislation on our business and our communities," Giant Eagle spokesman Dan Donovan stated in a June 21 written reply. "While at this time we have not enacted a plastic bag policy in any of our locations, we remain committed to bettering our communities through environmental stewardship. We look forward to further exploring this important topic as we do everything necessary to ensure we are acting in accordance with all local, state and federal regulations."

Kristin Mullins, CEO of the Ohio Grocers Association, said that the organization has not taken an official stance on plastic bag bans. Grocers are not leaning one way or the other, she said, but they want to work with lawmakers to find a solution.

"We're working on things from a state perspective," she said. "We understand the impact and want to be part of the solution for the environment, but it's hard when lawmakers do this piecemeal."

Ms. Mullins said uniformity across the state is the association's goal. From there, lawmakers and grocers can figure out what is best for the environment and make a plan for implementation. She explained that there is general concern through the grocery industry with plastic bag bans. She added that problems can arise when a chain store has locations in and out of Cuyahoga County, which will make it difficult to train employees and will lead to customer confusion.

While stores in Orange Village have already made the change, other retailers across Cuyahoga have about six months to prepare for the countywide plastic bag ban. ♻

Plastic bags, film and wrap are transported to a Trex facility in Virginia or Nevada where they are shredded, heated, mixed with wood scraps and molded into boards. The shredded bags travel down a conveyor belt at the facility as shown above. (Photo courtesy of Trex)

Plastic bags have second life as outdoor decks, new bags

By Julie Hullett | Published on July 18, 2019

Plastic bags have become pervasive in everyday life. Shoppers will more than likely receive a plastic bag at many retailers, and that plastic bag is often used once then thrown away. This single use plastic eventually makes its way to landfills and oceans, affecting habitats, wildlife and human health. That, however, does not have to be the end of the story.

Trex, a leading recycled materials manufacturer, offers a brighter alternative. This company collects recycled plastic bags, film and wrap from national retailers such as Giant Eagle, Aldi and Target, and reuses the materials for outdoor decks.

"Trex annually salvages and keeps more than 400 million pounds of plastic and wood scrap out of landfills. That makes Trex one of the largest plastic film recyclers in the U.S.," said Senior Director for Material Management Dave Heglas.

Other Northeast Ohio stores have similar arrangements. The majority of the Heinen's grocery stores in the region offer collection bins for plastic bag recycling, co-owner Jeff Heinen said. The grocery chain has collected used plastic bags, film and wrap for 20 years, he said, because "it was the right thing to do." Collected plastic materials are baled at Heinen's central distribution facility in Warrensville Heights, he said. The company Recycle It delivers the bales to Azek, a building materials supplier in Scranton, Pennsylvania, that turns the plastic into pellets for product production.

Plastic bags can be recycled into decking material that is shredded, heated and mixed with wood scraps. Trex is one company that creates the product. (Photo courtesy of Trex)

Plastic film to decks

Recycled plastic bags, film and wrap constitute 50 percent of the deck material that Trex creates, Mr. Heglas said. The other half comes from locally sourced reclaimed wood that would otherwise end up in a landfill.

Mr. Heglas said during production, the wood and plastic are separately ground into small pieces in either the Virginia or Nevada Trex factories. The plastic is then heated to make it soft and then is mixed with the wood. At this stage in the process, the material is malleable and soft with a consistency similar to Play-Doh, Mr. Heglas said.

The finished product comes out of the machines as individual boards pushed out of a mold, he explained, which are used later to build the decks. Trex typically offers boards that are 12 feet, 16 feet and 20 feet long, he said.

The average 500-square-foot composite Trex deck contains 140,000 recycled plastic bags.

The board is made of recycled materials, Mr. Heglas said, but has an outer coating that colors the board in various shades of red, brown, gray and black. Trex also recycles any scraps from their manufacturing process. Trex decks are recyclable, but Mr. Heglas explained that there is no system in place for customers to return their used boards.

"We worry about lookalike products," he said. "We have a specific formula and ingredients. If we recycle the material back into our product, we have to know what it is."

Polyethylene versus polypropylene

There is an important distinction between the types of plastic bags in the market place. The two main types are polyethylene, which is recyclable, and polypropylene, which is not.

"The films that aren't polyethylene are contaminating the stream and we don't want contamination," said Director of Film Recycling at the American Chemistry Council Shari Jackson.

Ms. Jackson said the resin determines if a plastic bag can be recycled. Film wrap with multiple layers cannot be recycled, she explained. Other types of resin have several additives, which make them not recyclable. She said that film that is crinkly, such as a wrap for fresh flowers or potato chip bags, are the non-recyclable polypropylene.

Mr. Heglas said the Trex process recycles polyethylene only.

"Hopefully there will be a market that can recycle polypropylene," Ms. Jackson said.

Polyethylene can have a low, medium or high density. According to Trex, low density polyethylene has a high clarity and moderate stretch. The recyclable low density polyethylene products include thick newspaper bags, bread bags and bubble wrap.

Medium density polyethylene has moderate clarity and poor stretch and strength characteristics. Examples of medium density polyethylene are plastic wraps around toilet paper and paper towels. High density polyethylene, according to Trex, has some opacity, low stretch and high strength. This includes most grocery bags, T-shirt bags and air cushioning.

One additional type of polyethylene is called linear low density, which has moderate clarity and is slightly sticky to the touch. Clear, thin newspaper bags and dry cleaning bags are linear low density polyethylene and can be recycled.

Novolex

Novolex, a packaging manufacturer, has also developed a process to recycle plastic bags, film and wrap. The company uses the Bag-2-Bag program, which is an American-based, closed-loop bag recycling system, according to Director of Sustainability at Novolex Erik Gonring.

How to recycle plastic bags

Plastic bags cannot go in curbside recycling bins. In order for them to have a second life as decking material or another plastic bag, they must be taken to specifically designated collection bins. Collection bins can be found throughout the Chagrin Valley, Solon and Geauga County to dispose of plastic bags properly.

Types of plastic accepted at collection bins:

- **Plastic shopping bags**
  The bags received with groceries or other merchandise inside them.
- **Stretch film plastic**
  For example, the type of packaging that holds a case of water bottles.
- **Clear bags**
  For example, bags that hold bread, buns or bagels.
- **Bubble wrap**
  The insulation in packaging.
- **Plastic produce bags**
  The bags used in the grocery store to hold fruits, vegetables
- **Plastic sleeves**
  For example, the bag in which some newspapers come.
- **Dry cleaner bags**

For a list of local plastic bag collection bins, turn to page 17.

Large bales of plastic bags are moved into the production area of Trex for processing. (Photo courtesy of Trex)

Novolex partners with retailers to collect plastic bags, film and wrap to turn it into new plastic bags. The recycled material is collected in bales and transported to Novolex's plastic bag recycling plant in North Vernon, Indiana. Novolex collects the same items as Trex for recycling, including plastic retail bags, produce bags, newspaper bags, dry cleaner bags, paper towel wrap and toilet paper wrap. They also accept Ziploc bags but the zipper must be removed prior to recycling.

"Yearly, the North Vernon facility processes 22 million pounds of recycled material," Mr. Gonring said.

Collected bags, which Mr. Gonring called post-consumer material, are cleaned and ground at the recycling center. Then the material is melted down and extruded into pellets. The pellets are mixed with virgin plastic pellets to form polyethylene sheets that are cut into plastic retail and grocery bags, he said.

Plastic bags can contain up to 40 percent of recycled material, Mr. Gonring said, depending on the color of the plastic. He said that reclaimed bags can be printed with different colors, so recycled pellets are often dark brown or gray. New, dark colored plastic bags can contain more recycled pellets.

According to Mr. Gonring, the Bag-2-Bag program is a single stream recycling system, and there is little contamination. The most common contaminant, however, is leftover receipts. At the North Vernon facility, there is an efficient solution to this problem. The materials are ground together and separated by water. The denser receipts sink to the bottom while the plastics float on top, he explained.

He also said that the price for plastics has gone down, so the material is worth less, but there is an opportunity to recycle more with growing demands to reduce waste.

"With increasing calls to reduce waste and recycle more of our plastics, the opportunity for Novolex, retailers and the consumers they serve is to partner to collect even more plastic for the Bag-2-Bag program," Mr. Gonring said. "The current market for recycled plastic film provides an opportunity to revisit the entire model and see if we can build new partnerships based on a shared desire to 'close the loop.'" ♻

Companies working to solve challenges of recycling glass

By Samantha Cottrill | Published on July 18, 2019

During the summer of 2018, the Geauga Trumbull Solid Waste District stopped accepting glass at its drop-off centers across Geauga and Trumbull counties, leaving residents wondering what to do with their jars and bottles.

Lisa Smith, administrative assistant of the waste district, said the change was due to Ohio Valley Waste increasing its rates if glass continued to be placed in collection bins. Cost increases in transporting glass and sorting it from other recyclables were among the reasons for the change.

The two-county waste district is looking for another hauler since the contract with Ohio Valley Waste expires on Dec. 31, 2019 she said, but there is no guarantee that glass recycling will resume with another company.

Mike Aey, Ohio Valley Waste sales specialist, said the hauling company is working to phase glass out of its recycling program because "glass is a commodity. It's not as recyclable as it used to be." Single-stream recycling companies across the country are starting to do the same, he added. That's because of collection contamination issues, increased transportation costs because of the weight and fewer places to sell glass, he said.

But not all companies are simply removing glass from their collection lists. Instead, there is a movement afoot by a number of organizations to solve the collection challenges. The most obvious reason could be the viability of glass. According to the Glass Recycling Coalition, glass can be recycled "endlessly" without reducing the quality of the material.

The coalition is a non-competitive group of more than 40 members of the glass recycling chain – including material recovery facilities, glass manufacturers and end-users that include companies like Coca-Cola or Bells Brewing – that collaborate to keep glass recycling going.

Challenges in process

According to the Ohio Environmental Protection Agency, glass is highly marketable because of its long-term cost savings.

"Glass container companies see significant energy savings if they use recycled glass compared to using raw materials to make their products," said Anthony Chenault, Ohio EPA media coordinator.

The dollar value of glass is low, he added, and "transportation and cleaning of the material received from residential recycling streams can be expensive."

Mr. Aey agreed that recovering and cleaning glass can be costly. "For some companies to be able to pull the glass out of the system, get it cleaned up to a point where an end user would take it and then ship it, [the companies have] now lost thousands of dollars

The glass industry is challenged today because recycling numbers across the U.S. are dropping, according to experts. Yet glass is the most recyclable material on the planet.

just on those tonnages."

But Mr. Chenault pointed out that glass recycling is mostly domestic, and import restrictions from countries like China have "little to no effect."

Glass that may break during single-stream collections contaminates the load, making other recyclables such as paper, plastic and cans less valuable, according to industry experts.

"What's happening now with China is shutting down on paper markets and plastic markets," Mr. Aey said. "Before [China's restrictions], everyone was OK with a little bit of that broken glass contamination being spread throughout a bale of newspaper or a bale of cardboard. That's no longer the case."

Glass recycling still has value, said Jim Nordmeyer, vice president of Owens-Illinois, a glass manufacturing company headquartered in Perrysburg, Ohio.

"I think the biggest challenge in glass recycling is the fact that there are markets," Mr. Nordmeyer, who is also one of the leaders of the Glass Recycling Coalition, said. Misinformation has confused the public, he said, and is "being used as a reason to discontinue the collection and recycling of glass in a number of major municipalities."

Waste hauling and recycling companies, however, cite transportation costs and glass contamination as some of their biggest obstacles.

Don Johnson, system development manager of Kimble, said keeping glass in the hauling company's recycling process is a challenge because glass can contaminate other materials in single-stream recycling collections.

"Now we've hit some [valleys]," Mr. Johnson said of the recycling markets' lows. "The valleys aren't as big as the Cuyahoga Valley anymore. They're as big as the Grand Canyon." Market prices for all recyclable materials are at a low because of contamination restrictions.

Mr. Johnson said these challenges "just take place as part of being involved with running a material recovery facility and working in curbside recycling programs." He added, however, that the company chooses to keep glass in its program despite the challenges because Kimble is "committed to recycling.

"It's a tough time, but we're going to work through it," he said.

Lisa Beursken, recycling coordinator of Republic Services, said glass makes up about 20 percent of the company's total volume and that the company receives as much as 400 tons of glass per day.

"We have to pay out $30 a ton to have that glass processed for recycling once it leaves our facility," Ms. Beursken said, and sometimes the cost is too high to ship the glass to processors. She added that keeping contaminants like bottle caps, shredded paper or pill bottles out of glass poses a challenge because the contaminants are about the same size as the 1- to 2-inch pieces of broken glass that processors want.

Finding pieces

"It's too small and it escapes where it needs to go through our system and ends up with our glass," Ms. Beursken explained about a pill bottle or a plastic cap mixing with glass. "So glass is usually the catchall for a lot of the contaminants. It's hard to keep it very clean and clean enough for the end user."

Facilities used by Republic can get most contaminants out of the glass, but pieces can still be left behind, she explained.

"We have a vacuum system on our glass collection system. It does take quite a bit of the mix, like the shredded paper, out," Ms. Beursken said. She added that the vacuum system can get some of the plastic bottle caps out of the glass, "but not necessarily the pill bottles." She said the company is always open to new ways of clearing contaminants.

Rumpke Director of Recycling Steve Sargent also cited issues in recycling glass including transportation costs and cleaning glass.

Rumpke has its own plant in Dayton, Ohio, which processes up to 6,000 tons of glass a month sorted

Know before you throw

Reusing and recycling materials helps to reduce our ecological footprint by minimizing energy and emissions. It also helps to keep materials that can take decades to break down out of the environment and landfills where they could be harmful to wildlife. Here is a list of recyclable items and how long it is estimated to take each of them to decompose when they are not disposed of properly, according to a number of industry experts.

Newspaper
2-6 weeks

Plastic bags
10-100 years

Plastic bottles
450 years

Cartons
5 years

Aluminum
80-200 years

Glass bottles
1 million years

from other facilities.

"The glass industry is really challenged today because our glass recycling numbers across the country are dropping because people are removing glass from their programs," Mr. Sargent said. Glass is dense and thus "costly to transport," he added.

As for the material's value, Mr. Sargent said glass remains consistent.

"We're at a nine-year low in the valuation of recyclables," he said of the declining number of companies that want this material for reuse. "What's very interesting is glass has maintained its value for the last probably eight- to 10-year period. It's not deviated that much. There's always been a market for that. It is just the fact that we've got to clean that material up to get it into their (processing) system."

In regards to transportation, Mr. Sargent explained that the value of glass is part of the issue.

Mr. Sargent said the basic raw materials of glass (primarily sand, limestone and soda ash) are "what keeps somewhat of a lid on the value from soaring.

"You've got a certain fixed value of glass; what it's worth compared to the cost of transportation. So when the cost of transportation can get to half the value of the glass, then you really have a challenge of how far you can transport that glass," he said.

"We're going through a difficult time now in the recycling industry, but I think it's something that we have to go through because we have been too dependent on the export markets in all of our recyclables," Mr. Sargent said.

Localizing the value chain

"Recycling is very local," Mr. Nordmeyer said, making each case unique. "In some cases it's a logistics problem. And logistics, of course, for any material can be a challenge."

Mr. Nordmeyer said there have been studies in an effort to find solutions. His company tells municipalities, that, "if we can concentrate the collection, the cleaning and the use in a concentrated area, and that concentrated area is a municipality plus a 200-mile radius, you can make those economics work."

Localizing the entire glass chain is key, he said. "It's putting that value chain together with the waste hauler, the recovery facility, the processor, the user, and making that happen with the 200-mile radius." This is easier said than done, he added.

"Speaking for the Glass Recycling Coalition, or even O-I as the glass manufacturer, there are parts of the United States where we cannot make that logistics challenge work because to move material it costs $12 (to) $14 per ton per hundred miles."

The transportation costs in some cases could be higher than buying virgin materials and making new glass, he explained.

Mr. Nordmeyer said the Glass Recycling Coalition works with municipalities to help them find solutions to their unique situations.

"We try to say, 'OK, let's look at this geographic area. Let's look at options. Can I move it by rail? Can I set up a network of trucking and leverage?'" he said. "We'll talk with those municipalities; bring experts in to have a discussion so that they can make an informed decision."

Mr. Sargent said Rumpke is working with the coalition to expand the hauling company's glass program.

Haulers collect tons of glass to be recycled for reuse. The rising cost of transporting glass to recycling factories is one issue facing the industry.

He said the Dayton facility actually needs more glass to fulfill contracts with some of the manufacturing companies that buy the broken down glass, or cullet, from the processing facility. "We are actually making efforts now to expand our glass program and we're looking at ways to bring in another 1,000 to 2,000 tons per month.

Rumpke is in discussions with the Ohio EPA and solid waste districts, Mr. Sargent said, about creating a depot in northern Ohio where glass could be cleaned and then shipped to Dayton for recycling.

"We're looking for that glass. The challenge is the transportation cost," he said. "So what does it cost to haul a truckload of glass from, for example, Cleveland, Ohio to Dayton, Ohio? All those things have to be factored into the cost of glass recycling, and that's what we're working on today to continue to refine that and get that cost down."

Ms. Beursken said that Republic Services is able to use the glass it receives as a road base if transportation costs are too high.

"We also have a beneficial reuse program through Ohio EPA to use [glass] as road base for our landfill facility. So we use it to build roads," she said, noting that Republic Services' high volume of glass intake shows a need for finding solutions. Ms. Beursken said Republic Services is its own end user for the road base and that the entire process is internal.

"Anything that we can do to keep things out of our landfills," she said. ♻

The glass recycling process

Glass containers are infinitely recyclable without reducing the quality of the material. Here is a visual guide to the endless cycle that keeps glass out of landfills.

1 Consumer uses glass container.

2 Container goes in recycling bin with other recyclables.

3 Hauler takes recyclables to a material recovery facility.

! **Glass fact:**
The three colors of recyclable glass (green, brown and clear) are broken into little pieces before being sold.

4 A material recovery facility separates glass from other recyclables, sorting the material by color and cleaning it. Here the glass goes into a pile until it's ready to be shipped/sold to a glass manufacturer.

5 Glass manufacturer turns the glass into a new container.

Glass transported from material recovery facility to glass manufacturer.

! **Glass fact:**
Some companies have separate glass processing facilities, or contract with others, for the cleaning and sorting of glass.

Glass transported from glass manufacturer to supplier.

6 New glass containers are sold to suppliers (Coca-cola, Prego, Frito-Lay, etc.) for their products.

Product transported from supplier to store

7 Glass containers full of suppliers' products are shipped to local stores and ready to be purchased by a consumer.

Purchased product transported from store to home.

Experts say circle of life for glass containers is endless

By Samantha Cottrill | Published on July 18, 2019

Glass containers – created from sand, limestone and soda ash – can be recycled endlessly.

Though some recycling haulers temporarily stopped collecting glass bottles, jars and other such containers, this material is inexhaustible.

Residents are an intricate part of the cycle of renewability when they toss a glass container into a recycling bin – along with cans, paper and plastic. Initially, glass is separated from other recyclables at a material recovery facility, cleaned and sold. The glass manufacturer turns the old glass into new glass and sells the containers to companies like Prego or Coca-Cola who use the glass bottles for their products. The food manufacturers then line supermarket shelves with their products for consumer sales. When the jars or bottles are empty, the consumer recycles the containers to start the process over again.

Though simple on the surface, the glass recycling process is more complex. Waste hauling companies with recycling programs and a glass manufacturer, however, were able to break the process down – along with the glass – to explain its ins and outs.

Steps may vary slightly at individual companies, but the general idea of separating and processing the glass to be sold to a manufacturer is about the same.

Starting with consumer

Lisa Beursken, recycling coordinator of Republic Services, said glass makes up about 20 percent of Republic Services' total volume of recyclable materials.

"Our recycling customers for glass are mostly commercial and residential, and I can tell you the majority is residential," she said.

For Republic Services, Ms. Beursken said glass is taken out of the mix of recycling toward the end of the single-stream process.

"Cardboard and paper are first taken out of the system, and glass falls through our screens. It's towards the very end," she said. "Plastic is our very last stop."

She explained that their glass recycling at the facility includes a vacuum system to help separate small pieces of plastic or other small contaminants from the separated glass that goes through the screen.

Once the glass, along with the other recyclable materials, arrives at a Republic Services facility, "we separate out the materials, we bale it up or we put it in piles and then that material goes out to the other users that either melt it down or make it into a more useful material and sell it out from that point."

Don Johnson, system development manager of Kimble, said his company does curbside collections as well as municipalities that take their recyclable materials to the company's Twinsburg location.

Through mechanical and manual sorting, Mr. Johnson explained, glass is separated from other recyclables first. "You want to get the glass out at the very beginning," he said. "The equipment that we have in place does a nice job of that."

He explained that once the glass is separated, "the glass goes to a process machine that breaks it down to 5 inches in size and smaller." Mr. Johnson said Kimble stockpiles the separated glass in a "bunkered area" of their facility until the area is full. Then, "we put the material into trucks and then we ship it off to places that then take the glass."

Rumpke owns its own glass recycling facility in Dayton, Ohio, making the separation process different.

Steve Sargent, Rumpke director of recycling, said glass makes up 15 percent to 20 percent of what the company collects from its residential customers.

"The glass comes in from single stream, and that's generally the way that most of the recyclables are collected from your household today," he said. "So you put everything (curbside recyclables) in one bin, [it] gets picked up, it's taken to a recycling center."

Mr. Sargent explained that glass recycling, "is usually screened out of the stream at the very beginning of that [recycling] process." Once glass is separated from the rest of recycling, Rumpke transports the broken mixed glass to its own facility.

"We've invested a lot of our capital in our cleanup systems and our recycling centers," Mr. Sargent said. "We clean [the glass] out first. It goes through a pre-cleanup stage, meaning that we try to get as much of the non glass out of it as possible. For example, in Columbus, where we have a large (material recovery facility), or down in Cincinnati, we pre-clean it and then we transport it by dump trailer over to our Dayton glass plant. Now it arrives at Dayton probably with a contamination rate of non-glass [items] in it probably somewhere in the 15- to 20-percent range."

Mr. Sargent explained that small pieces of plastic, like straws or bottle caps, shredded paper or even things like pencils, which should not be recycled, can be left over in the glass after it has been screened out from the rest of the recyclables. Mr. Sargent said the Dayton facility is designed to remove those contaminants.

Then, the glass is separated by green, brown and clear thanks to optical scanners that use light to detect the color of the glass, he said.

"I would basically probably say that the material coming into the Dayton glass plant might be glass bottles and jars that might be broken down into the 2-inch to 3-inch size," Mr. Sargent said. Those larger pieces of broken glass are scanned and optically removed to be sold to the container industry to be manufactured into new glass bottles and jars.

Broken glass that is too small for the container industry is ground into a "fine grind," he explained, to be made into fiberglass insulation.

Mr. Sargent said Rumpke sells two-thirds of its recovered glass to fiberglass insulation manufacturers. Rumpke contracts with Johns Manville in Milan, Ohio, for example, whose products can be found on the shelves of a local Walmart or Lowe's, he said. The other third of Rumpke's recycled glass, he said, goes to the glass container industry.

Mr. Sargent said Rumpke contracts with Owens-Illinois (O-I) for its glass cullet, which is broken glass that is ready to be melted for the production of new glass.

O-I is a glass manufacturing company headquartered in Perrysburg, Ohio with about 19 different suppliers for cullet from across the United States, including Rumpke, said Jim Nordmeyer, O-I vice president of global sustainability.

O-I prefers to purchase each color of glass individually, he said, but the manufacturer will sometimes purchase cullet of all colors mixed together.

"We want to be able to control the blend of the three [colors of glass – clear, green and brown]," Mr. Nordmeyer said, explaining that all glass has the same base chemistry. The different colors might not blend well if they are mixed in the wrong proportions. "We like to control the mix so that we can control the properties of the glass, the color, the set time, its performance in our process so that we can be very efficient at making a glass container.

"When you're making containers at 700 a minute, you don't have a lot of room for error," he said.

Recycled glass is commonly blended with raw materials.

"The percentage at which it's blended varies by color," Mr. Nordmeyer said. "We make containers to the specifications of a consumer product."

"The glass comes in from single stream, and that's generally the way that most of the recyclables are collected from your household today. So you put everything (curbside recyclables) in one bin, [it] gets picked up, it's taken to a recycling center."

— Steve Sargent, Rumpke director of recycling

He said recycled glass generally makes up anywhere between 10 percent to 90 percent of a container, adding that "the more recycled glass we can use, the less energy we consume because it takes less energy to melt recycled glass than it does virgin, raw materials, and it also results in less greenhouse gas emission."

Mr. Nordmeyer explained that it is possible for the manufacturer to make a container with 100 percent recycled glass, but they lose control over the color of the container. "Ninety to 95 percent would be the [maximum] under normal conditions," he said.

The colors of glass containers serve a purpose.

Mr. Nordmeyer explained that while clear glass containers are for the aesthetic of showing off a product, "we target to a specific wavelength of color in the range of greens or the range of browns." He explained that green and brown containers are a specific color for a product to provide resistance to UV or fluorescent light.

Beer bottles, he said for example, are typically brown to filter out wavelengths of light that could affect the hops in the drink, and beers in clear bottles are a specific formula of beer that uses a stabilized hop not susceptible to light.

O-I supplies glass containers to the food and beverage industry, Mr. Nordmeyer said, which takes the containers right to the local grocery store.

He said O-I supplies containers for brands like Prego, Tabasco, Frito Lay and Coca-Cola among many others and that O-I containers make up about one out of every three glass containers in the U.S. and one out of every two glass containers globally. ♻

The 5 R's of zero waste

Pioneered by Bea Johnson, author of *Zero Waste Home*, the five "R's" of zero waste were created to help people reduce their waste footprint at home and beyond. Recycling is a part of helping to reduce one's carbon footprint; however, it's not necessarily the best solution to waste reduction. In Johnson's model, recycling and composting are last resorts after efforts are made to refuse products, reduce consumption and reuse items.

1. REFUSE: Say no and prevent waste.

- Avoid single-use products.*
- Say "yes" to sustainable goods and services.*
- Go paperless with bills and statements.
- Purchase bulk items to cut back on packaging waste.

2. REDUCE: Cut back on consumption.

- Avoid harmful, chemical-based products.
- Walk, bike or carpool when possible.
- Focus on necessary purchases, avoid splurges.
- Consume less: water, electricity, fossil fuels, packaged products.

3. REUSE: Switch away from disposables.

- Invest in reusable alternatives for everyday products.*
- Shop at consignment or thrift stores.
- Repair broken items instead of buying new ones.
- Repurpose old clothes or household items.

4. RECYCLE: Properly place in receptacles.

- Become familiar with your community's program.
- Take plastic bags to designated bins.
- Use glass containers at home instead of disposing.
- Donate non-recyclables to organizations that accept them.

5. ROT: Compost all waste possible.

- Put leftover food (no meat, fish or dairy), coffee grounds and tea bags in a compost pile instead of disposal or trash.
- Don't throw away yard waste, put it in the compost pile.
- Add food-soiled paper products that can't be recycled to the pile.

* See page 46 for a full list of single-use products to avoid and sustainable alternatives

Automated collection linked to increase in recycling

By Sue Reid | Published on July 18, 2019

Considered phase 2, recycling took a turn to automation in Solon more than five years ago, resulting in greater efficiency of operations and an annual savings that far out-measured the city's initial investment.

It was in 2007 that the city went from a manual to automated collection of its trash and eventually its recycling, resulting in an annual cost savings of more than $200,000 and a record decrease in the amount of solid waste collected.

In fact, at that time the numbers associated with solid waste collection were the lowest they had been in 25 years, Service Director Thomas Bandiera recalled.

The automation began with solid waste, with the city still picking up recyclables in a co-mingled fashion in plastic bags and taking it to a local recycling handling facility in nearby Oakwood Village.

The automation of the trash collection resulted in more efficiency all the way around, Mr. Bandiera continued, and a reduction in the total amount of solid waste collected citywide. That number reduced by 32 percent, equating to a 3,200 ton reduction, and resulted in an annual savings of $124,000 through reduced tipping fees.

"With fewer trucks out there picking up solid waste and with automated trucks, we decided a couple years later to launch the idea of automation for recyclables," Mr. Bandiera continued.

An automated recycling program took root in 2013, with a pilot study launched over that next year in select areas in the city. This study included homes of various sizes to determine what kind of participation rate was occurring, Mr. Bandiera explained.

All of the feedback was positive from the pilot study, Mr. Bandiera noted, with recycling numbers in the pilot areas increasing due to the new way of doing things. As part of the pilot study, residents were given a dedicated cart to mix their items.

"That is when the city got rid of bags," Mr. Bandiera recalled, noting that even today, plastic bags remain a "tremendous nuisance across the United States as they are almost impossible to recycle," he noted.

At the end of the pilot program, and in 2014, the city introduced a fully automated recycling system with dedicated collection carts. Solon invested over $750,000 in implementing the program, which included $470,000 for the containers and $285,000 for the truck.

The success of the automated program was in the numbers, with an increase of 105 percent in participation rates and 121 percent increase in the total tons of recyclables being collected since 2007, when single stream was introduced.

In 2007, the city collected 957 tons compared to 2,114 tons in 2016. That increase resulted in an annual savings of approximately $82,446 through reduced tipping fees and has continued each year.

Automated curbside pickup has increase the rate of recycling in many communities including the city of Solon.

Fast forward and the amount of recyclables the city collected in 2018, along with the revenue, exceeded $90,000.

"The city recognized a cost savings above $90,000 and were able to divert 2,100 tons from the waste stream," he said. "If we didn't do recycling we would be paying for that.

"The city was once picking up roughly 1,200 tons and that went to 2,100, nearly doubled, with the automated program," Mr. Bandiera said.

"We have worked very hard to get to where we are at," Mr. Bandiera said. "You don't get into recycling to make money, but because it's the right thing to do and diverts from the landfill."

Nationwide, there is not a lot of landfill space available and essentially no place to put garbage, he added.

"People have to come up with ways to get rid of what we produce as consumers," he said.

Currently, the city contracts with Kimble, with recyclables going to its recycling handling facility in Twinsburg. Solid waste goes to Republic in neighboring Glenwillow.

"There are no local landfills anymore," Mr. Bandiera said, with the closest one being in Wayne County.

"With the change to automation comes continued challenges," Mr. Bandiera concluded. "The industry is changing and the outlet of how we can get rid of recyclables is challenging.

"We still have a great program," he added. "It really just comes down to education." ♻

Before recycling, aim to minimize waste

Two of the three steps to take before recycling (as seen on page 43) are to refuse single-use products and invest in reusable alternatives. By replacing these "throw away" products with sustainable alternatives, households can cut their output of waste. Here are some ideas of how to incorporate reusable products into the home and on the go.

KITCHEN

⊛ Use glass jars or beeswax wrap for food storage instead of foil or plastic wrap.
⊛ Ditch the paper towels and use washable cloths instead.
⊛ One reusable coffee filter can replace hundreds of disposables, similar to loose leaf tea and an infuser!

BATHROOM

⊛ Purchase shampoo, conditioner and soap in bulk and use refillable bottles.
⊛ Invest in electric toothbrushes and razors with reusable heads.
⊛ Use washable, cotton face pads instead of disposable cotton balls, makeup-remover wipes, etc.

Try this!

Cook more at home. Buying ingredients in bulk and crafting frequently-used foods from scratch (like bread, cookies, pasta sauce, granola bars and jam) can prevent pounds of packaging waste. Homemade food is a fresh and healthy alternative for the family.

Try this!

Make your own body care products. From sugar scrubs, face wash and lotions, many of these products can be crafted at home. Not only will this replace dozens of disposable items, but it's also a fun way to get friends and family together to personalize their own items!

OFFICE

⊛ Get ink cartridges refilled instead of purchasing new ones.
⊛ Keep digital files instead of paper ones.
⊛ Invest in refillable pens and pencils instead of disposable ones.

ON THE GO

⊛ Use a travel coffee mug or water bottle.
⊛ Invest in a stainless steel drinking straw.
⊛ Keep tote bags in the car for grocery shopping.
⊛ Carry a handkerchief instead of using tissues.
⊛ Pack a lunch in a lunchbox and use washable silverwear and storage containers.

LIVING ROOM

⊛ Bring back the "old school" mop and feather duster.
⊛ Use home made cleaners with natural ingredients in reusable bottles instead of chemical-based alternatives.

Materials go through several quality control belts where employees pick off contaminants including shoes, plastic bags, bowling balls and more at the Republic Services material recovery facility in Oberlin, Ohio. (Photo by Geoff Powers)

The intricate operation of sorting recyclables at processing plant

By Tim Tedeschi | Published on July 25, 2019

So you've rinsed out all your jars, kept your bin clean and dry and have only recyclable materials from your hauler's list inside your container. Where does all that paper, plastic, glass, aluminum and cardboard go next, and what do some of the end recycled products look like?

After being picked up at the curb or dropped at a center, recyclables are transported to various material recovery facilities known as MRFs throughout the region. The Times took a tour of Republic Services' facility in Oberlin, Ohio to get an idea of what happens next. While each MRF operates slightly differently, most generally have a similar flow and process.

"We just basically sort it," Republic Operations Manager Dan Schoewe said of the MRF's role in the recycling stream. "A milk jug needs to be separated from newspaper, which needs to be separated from cardboard. We don't turn anything into anything else here; we don't do any more of the process. We get it to a baled or shippable state and then move it out."

Mr. Schoewe said the MRF runs two 10-hour shifts per day, with about 30 employees working each shift. Around 400 tons of materials are processed daily, with unrecyclable contaminants making up about a third of all processed materials.

"There's not too many things that we make money on where it will cover even the cost of the processing, so that's why we charge a tip fee," he explained.

MRF journey

The process begins with trucks unloading recyclables from residential programs, drop-off locations and commercial Dumpsters onto the tip floor. While materials are waiting to enter the MRF, Recycling Coordinator Lisa Buersken and her team work to eliminate the most egregious loads of contaminants.

"I'm looking at loads, I'm taking pictures of loads, we're trying to identify the contaminants and where the contamination is coming in," she said. "It's easier on the loads that are straight loads, so the loads that are coming in from specific companies, so you can say, 'Hey we don't want this type of plastic coming in.'"

"(The optical sorters) can tell by color spectrum what type of plastic it is, and the material will go underneath at the high intensity light bank of cameras, and as it's going down, it knows and targets that material it's looking for. When it comes off that belt it's going to activate certain air nozzles that blow that where it needs to go, so it's sorted that way."

— Republic Operations Manager Dan Schoewe

After being screened for items like propane tanks that would cause serious damage or fire to the facility, the recyclables are loaded into a metering bin where a 6-foot tall drum begins the process of sorting different materials.

"This is the first mechanical means for sorting that we have," Mr. Schoewe said. "It's a very violent process; you're not going to see a lot of glass bottles make it through the whole facility. And materials go under and over the drums at the same time."

The materials then go through the MRF's pre-sort area; this is the first time employees have a hand in actively removing contaminants. Mr. Schoewe said the pre-sort workers are focused on contaminants that will damage equipment, including concrete blocks, scrap steel, dog chains, garden hoses and full bags of trash.

Once through the pre-sort, all materials go through a cardboard screener, where the lighter-weight cardboard floats over large spinning disks while the rest of the materials fall to the bottom. After going through some quality control workers, the cardboard is then baled.

The fast-spinning disks that are part of the cardboard screener and other MRF machinery are susceptible to damage when items such as single-use plastic bags get caught in between and prevent their motion, Mr. Schoewe said.

"That plastic wrap, film, the bags, we don't want it," he said. "It's not only a contaminant, but now it's going to cost us downtime. You can't let those (disks) get full because then it doesn't serve a purpose; nothing's going to fall through them because then it's a conveyor belt."

Materials next travel to a scalping stream of conveyors, which includes a glass breaker where everything 2 inches or smaller falls through. The glass is then hauled outside where it is stored and ready for transport.

Mixed paper, including newspapers, junk mail and magazines, are the next material to be sorted through the scalping stream through sorting stations until they are ready to be baled. The remaining aluminum cans and plastics go through conveyors and are sorted through a combination of magnets, eddy currents and optical sorters.

An eddy current is "a rare earth magnet that repels aluminum," Mr. Schoewe said. "So it's going on the belt at a pretty high speed, then it gets to a head point that's made out of rare earth magnet and it makes the aluminum can kind of flutter jump."

Once the aluminum has jumped onto a higher conveyor and is sorted out to be baled, plastics follow a similar path of sorting.

"(The optical sorters) can tell by color spectrum what type of plastic it is, and the material will go underneath at the high intensity light bank of cameras, and as it's going down, it knows and targets that material it's looking for," he said. "When it comes off that belt it's going to activate certain air nozzles that blow that where it needs to go, so it's sorted that way."

Once everything has been sorted into its respective material, several quality control checks are in place to get those loose plastic bags, shoes and whatever else may have made it through the facility before baling.

Contamination elimination

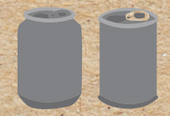
Mr. Schoewe and Ms. Beursken emphasized that no matter what hauler you use, it is important to know what is and isn't accepted in your recycling program. The heavy contamination leads to nearly constant maintenance on MRF machinery, not to mention bales with higher contamination levels being less valuable on the commodities markets.

"We have a morning break, a lunch break, afternoon break and then a break in between shifts, so every one of those there are certain screens on here that we have to get into on every break and clean out," Mr. Schoewe said. "If we don't get in there and get those bags off of there, off of those screens, we just turned it into a conveyor and it's not going to do what it's supposed to, and that's going to cause more issues."

How recycling turns trash to new treasures

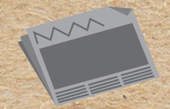
Recycling doesn't end at collecting, and materials must have a use and a buyer to be considered truly recyclable, according to recycled materials manufacturers. Here are examples of what your recyclables can become when recycled properly.

Cans become...



- New cans
- Vehicle parts
- Foil products

Newspaper becomes...



- Newsprint
- Cereal boxes
- Packaging

Plastic bottles become...

- Carpet
- Book bags
- Safety vests

Plastic jugs become...

- Picnic tables
- Planters
- Water bottles

Glass bottles become...

- New bottles
- Insulation
- Abrasives

Plastic bags become...

- Composite lumber (decking)
- New bags

After recyclables are picked up from drop-off locations or curbside programs, they are transported and dumped on the tip floor of various material recovery facilities in the area including Republic Services' location in Oberlin, Ohio. (Photo by Geoff Powers)

After being sorted with most of the contamination eliminated, materials are baled and stored for shipment to businesses that repurpose the recyclables. (Photo by Geoff Powers)

While plastic bags are the No. 1 contamination culprit, contaminants include pill bottles, bowling balls, lawn mower blades, needles, batteries, stuffed animals, ammunition and nearly any other piece of trash you could think of, Mr. Schoewe said. Republic does not recycle clothing at its MRF plants, making it a major issue in slowing down the overall process, he said. Just to see how much Republic receives, he said, the company monitored a half-shift and collected nearly 1,800 pounds of clothing.

"That's not in our program. We don't want it," he said of clothing. "Get it to a Goodwill. Get it to someone who can use it again, but that's not what we do. There are liabilities there and we're just not set up for that."

Ms. Beursken said she is actively working with communities and businesses with which Republic contracts to better educate the public on what should and should not be placed in recycling bins. Republic conducts depth waste audits weighing out how much of each recyclable and how much waste a certain entity generates. A grant-funded pilot program in Lorain involves workers looking inside bins, tagging and rejecting them for repeated contamination violations before the truck goes down streets for collections.

"So we're trying to do more in depth to see that 30-percent contamination go down and try to eliminate that," she said. "That's wear and tear on our equipment, that's safety for our folks, and that's less residual that we have to worry about in the supply."

Where it goes

After making its way through the MRF, recycled materials are shipped to various businesses to be fully recycled into a new product. Aluminum cans are sent to beverage companies like Anheuser Busch and Coca Cola, with a recycled can able to be back on a store shelf within 60 days of a consumer placing it in a recycling bin, Ms. Beursken said.

Mixed paper and cardboard are sent to companies like Pratt Industries or Greif, where they are recycled into corrugated cardboard, paperboard and recycled paper. Pratt is opening a container board mill in Wapakoneta, Ohio that will be able to process up to 425,000 tons of recycled fiber yearly, according to the company website.

Plastics are shipped to a variety of companies, including Haviland Plastics located in Northwest Ohio.

"We receive the bales, we grade it or look at it for quality and then it goes through a process where the bales are de-clumped or just broken apart," Ross Stoller of Haviland Plastics said. "It goes through a manual sort, or it can go through a robotic sort or optical sort which pulls out more of the material. From that point it will be granulated, cut up into small pieces, and after it is granulated there's a wash and then a drying process. It goes through another resizing machine to make it even smaller and then at that point it's ready for shipment."

Mr. Stoller said Haviland processes multimillions of pounds of recycled plastics per year, with the granulated plastics being used to make nursery containers for potted plants and agricultural drainage tile.

Glass goes to companies including Johns Manville, with several locations in northern Ohio, which manufactures fiber glass insulation and commercial roofing products.

"We incorporate an average of 25 percent recycled content across North America," Johns Manville's 2016-2017 sustainability report states. "That content (as certified by Scientific Certification Systems) includes an average of 20 percent post-consumer, with the balance consisting of post-industrial recycled glass. All that adds up to tens of thousands of tons of recycled content in JM fiber glass insulation each year."

Curbside textile recycling saves in dumping fees

By Sue Reid | Published on July 25, 2019

Recycling efforts continued in the City of Solon nearly four decades after it began, with the launch of textile recycling in recent years with instant success in diverting items from the waste stream.

"Anything we can keep out of the waste stream saves the city money," Service Director Thomas G. Bandiera said.

Since the start of textile recycling, a total of $6,000 in public funds have been saved in tipping fees, he said, referring to dollars the city pays to dump refuse in a landfill based on weight. Most importantly, the city has diverted more than 258,000 pounds of recycling from the landfill or 130 tons.

While it is not a big moneymaker, textile recycling serves to repurpose items such as clothing, toys, pillows, shoes and more. Though charities collect clothing and other used textiles, residents have had few outlets for the material, often throwing it in the trash bin.

In addition to diverting solid waste, another benefit of the program is it is of no cost to the city or its residents. Solon works with Simple Recycling, a private company that administers the curbside collection. Responsive to residents, especially those requesting new bags, Simple Recycling picks up the items, following the regular rubbish routes.

With everyone's busy lifestyles, it is often difficult to take these items to charitable bins for collection.

In addition to the clothing, shoes and toys, soft recyclables also can include draperies, plates, flatware and more. Some weeks are bigger than others in terms of collections, Mr. Bandiera said, with spring being a big time for collection as residents are cleaning out their closets to get rid of winter clothes.

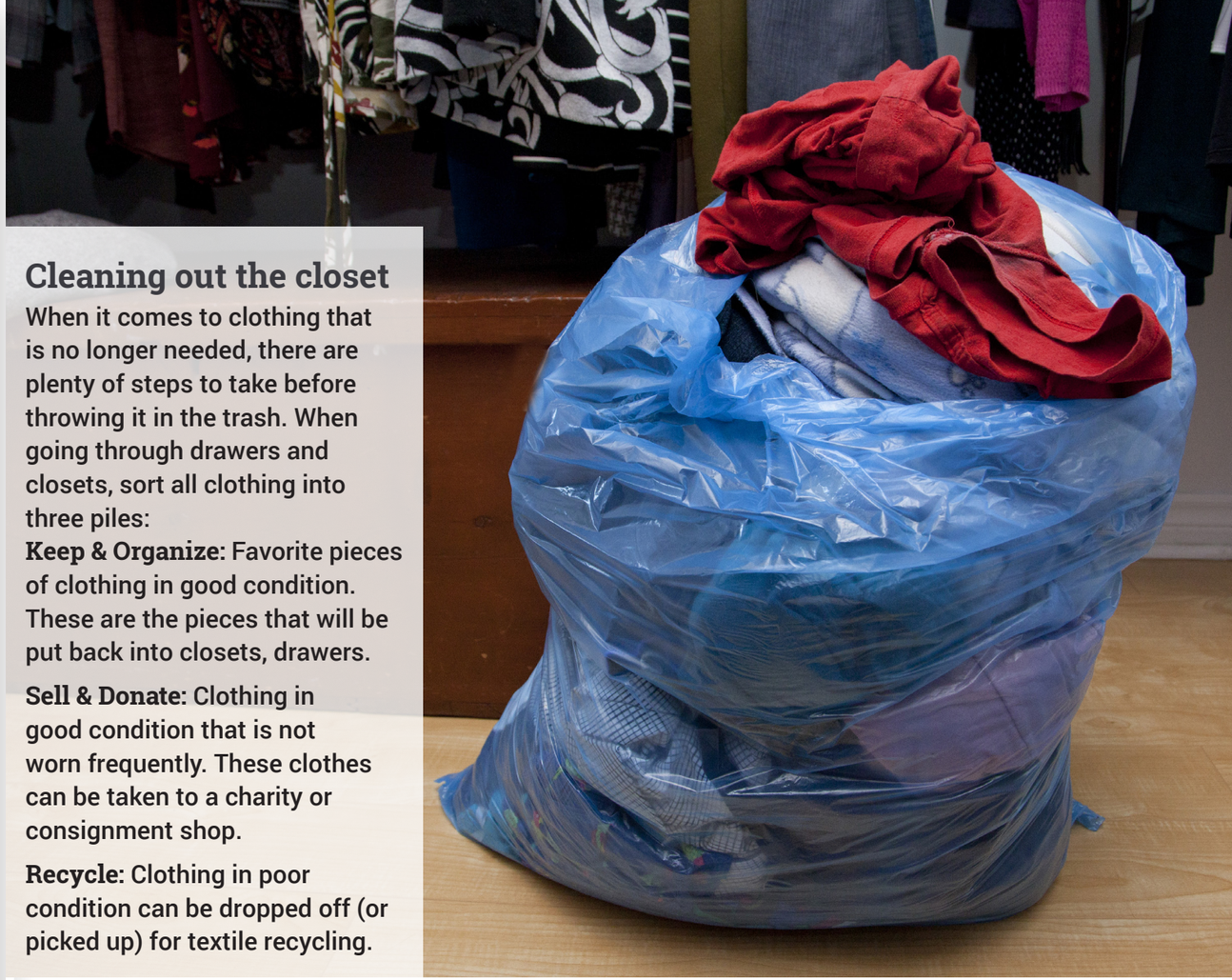
"We won't have a constant stream of things, but the key is to capture what can be reused from going to the landfill," he said.

Mr. Bandiera said the continued success of this program and recycling in general is due to the residents' willingness to take part.

"We thank the residents because without their participation, we could not do it," he said.

"As a city, we are producing less garbage and recycling more," Mr. Bandiera added. "We are making great strides."

Residents can recycle aluminum, tin and steel cans, plastics of many varieties, glass, newspapers, office paper, paper grocery bags and much more in the regular recycling bin.



Cleaning out the closet

When it comes to clothing that is no longer needed, there are plenty of steps to take before throwing it in the trash. When going through drawers and closets, sort all clothing into three piles:

Keep & Organize: Favorite pieces of clothing in good condition. These are the pieces that will be put back into closets, drawers.

Sell & Donate: Clothing in good condition that is not worn frequently. These clothes can be taken to a charity or consignment shop.

Recycle: Clothing in poor condition can be dropped off (or picked up) for textile recycling.

Mr. Bandiera noted that the city cannot recycle Styrofoam, such as the large boxes that TV sets or appliances come in, pots or pans, metal hangers, Corning cookware and silverware for example. Residents are also asked not to place window glass, ceramic dishes or cups into their carts as well as no small appliances or plastic buckets, bins, pails or broken laundry baskets.

"There are certain things that cannot be recycled together," Mr. Bandiera continued. Batteries should not be put in the carts, nor should food scraps, he added.

There are collection centers where residents can drop off their used batteries, food scraps, paint and other such items for recycling or disposal.

Mr. Bandiera said that overall the city continues to work to educate residents to focus more on what they are putting in their carts, making sure the items are clean and authorized.

"Solon is one of the leaders in the county on it," Mr. Bandiera said of the recycling program. "We worked hard to build it to where it is at, and we are proud of it as a community."

Decoding recycling

Often mistaken as “recycling codes,” the numbers often seen on items are referred to as “Resin Identification Codes.” The system was established by ASTM International to help identify what compounds make up an item to help with proper disposal and recycling.
The numbers displayed inside the familiar recycling symbol can be found stamped on each container. Using information from community collection centers, consumers then can determine if the container qualifies for curbside recycling, must be taken to a special drop-off site or must be thrown away.

PLASTICS	TYPE	DESCRIPTION	USES	RECYCLE?
1	#1 PET(E) Polyethylene terephthalate	▪ Clear, tough plastic ▪ Commonly used for single-use products	▪ Drink bottles ▪ Food jars ▪ Liquor bottles ▪ Salad dressing ▪ Cooking oil	Curbside/ dropoff
2	#2 HDPE High-density polyethylene	▪ Colored, dense plastic ▪ Commonly used for durable food packaging	▪ Milk jugs ▪ Toiletry bottles ▪ Cleaning agents ▪ Detergent ▪ Soap bottles	Curbside/ dropoff
3	#3 PVC Polyvinyl chloride	▪ Rigid, durable plastic ▪ Commonly used in building and construction	▪ Pipes ▪ Flooring tiles ▪ Windows ▪ Gutters ▪ Air ducts	Special dropoff
4	#4 LDPE Low-density polyethylene	▪ Soft, flexible plastic ▪ Commonly used for wrap and bags	▪ Frozen food bags ▪ Clear bags ▪ Plastic bags ▪ Sandwich bags ▪ Bubble wrap	Special dropoff
5	#5 PP Polypropylene	▪ Strong, flexible plastic ▪ Commonly used for food packaging/storage	▪ Margarine tubs ▪ Yogurt cups ▪ Tupperware ▪ Pill bottles ▪ Bottle caps	Throw away
6	#6 PS Polystyrene or Styrofoam	▪ Diverse materials ▪ Commonly used for cups, packing foam	▪ Disposable cups ▪ Take-out boxes ▪ Single use cups and plates ▪ Egg cartons	Throw away
7	#7 OTHER Miscellaneous plastics	▪ Diverse materials ▪ Mixed material plastic products	▪ Water cooler jugs ▪ Baby bottles ▪ Compact discs ▪ Eyeglasses ▪ Auto parts	Throw away

CHECK BEFORE YOU TOSS!

Check with local or private services before recycling or throwing away as standards may vary. Also be sure recyclables are free of food residue, grease, etc. to avoid contaminating the hauler.

PLASTICS	TYPE	DESCRIPTION	USES	RECYCLE?
20	#20 PAP Corrugated fiberboard	▪ Three-layered cardboard ▪ Commonly used in boxes for packing, shipping, etc.	▪ Any standard, three-layered cardboard box that is dry and free of food contamination	Curbside/ dropoff
21	#21 PAP Mixed paper	▪ Mixed finish paper ▪ Paper that varies in weight, texture and finish	▪ Magazines ▪ Catalogs ▪ Junk mail ▪ Envelopes ▪ Coupon clippings	Curbside/ dropoff
22	#22 PAP Paper	▪ Standard paper ▪ Mostly office, letter or printer paper	▪ Newspaper ▪ Office paper ▪ Books (no cover)	Curbside/ dropoff
23	#23 PBD Paperboard	▪ Single layer paperboard ▪ Commonly used in product box packaging	▪ Food boxes ▪ Tissue boxes ▪ Shoe boxes ▪ Toiletry boxes ▪ Toilet paper rolls	Curbside/ dropoff

PLASTICS	TYPE	DESCRIPTION	USES	RECYCLE?
40	#40 FE Steel	▪ Strong and low cost metal ▪ Commonly used for heavy construction, infrastructure	▪ Food cans ▪ Silverware ▪ Frying pans ▪ Baking tins ▪ Scrap metal	Special dropoff
41	#41 ALU Aluminum	▪ Light and durable metal ▪ Commonly used for food preparation and packaging	▪ Drink cans ▪ Pet food tins ▪ Bottle Caps ▪ Foil Wrap ▪ Deodorant cans	Curbside/ dropoff

PLASTICS	TYPE	DESCRIPTION	USES	RECYCLE?
70	#70 GL Clear glass	▪ Clear, colorless glass ▪ Commonly used for food and beverage containers	▪ Beer bottles ▪ Condiment jars ▪ Canning jars	Curbside/ dropoff
71	#71 GL Green glass	▪ Green colored glass ▪ Commonly used for food and beverage containers	▪ Wine bottles ▪ Oil bottles ▪ Liquor bottles	Curbside/ dropoff
72	#72 GL Brown glass	▪ Brown colored glass ▪ Commonly used for alcoholic beverage containers	▪ Beer bottles ▪ Liquor bottles ▪ Essential oil bottles	Curbside/ dropoff
75	#75 GL Light leaded glass	▪ Thick, clear/opaque glass ▪ Commonly used in electronics, household decor	▪ Display glass in electronics, TVs ▪ Some windows ▪ Some light fixtures	Special dropoff
78	#78 GL Silver mixed glass	▪ Silver, reflective glass ▪ Commonly used in mirrors, household decor	▪ Mirrors ▪ Candle holders ▪ Fine cutlery	Throw away

Revenue from plastic bag recycling on decline

By Julie Hullett | Published on July 25, 2019

Plastic bags can be found at many retail stores across the country. Some have switched over to paper bags, while others still distribute millions of plastic bags per year. In an effort to reduce their environmental footprint, many stores have partnered with Trex, a recycled materials manufacturer that turns plastic bags, film and wrap into outdoor decking.

When customers return their plastic bags to grocery or other retails stores with collection bins, the used bags can be recycled and made into new items.

Grocery bag recycling

In the 1990s, Giant Eagle introduced a plastic bag recycling pilot program at select locations and now has a mandate that requires all corporate store locations to recycle plastic bags and film.

Each location has a recycling bin and accepts items such as plastic shopping bags, bread bags, newspaper sleeves, produce bags, dry cleaner bags, stretch film plastic and bubble wrap. Stretch film plastic can be found wrapped around water bottle packages, for example.

At the Solon and Bainbridge locations, Giant Eagle customers have recycled 47,000 pounds of film plastic in one year, according to a corporate statement.

Heinen's, Kohl's, Target and other retailers also have collection bins for used plastic bags.

A Giant Eagle corporate representative explained that when the bin is full, the materials are compacted, picked up by a hauling company and held at a warehouse. Once about 20 tons of bags are collected at the warehouse, the plastic is taken to a processing facility in Virginia where it is made into composite building material.

Trex, a processing facility in Virginia, manufactures boards for outdoor decks from recycled plastic bags. Trex has many participating locations throughout the country, and buys plastic bags from various stores in Ohio, including Giant Eagle, Target, Kohl's and Kroger.

NexTrex partnership

Trex's Senior Director for Material Management Dave Heglas noted the three C's of the company's take-back program: communicate, collect and consolidate.

"We probably have over 30,000 locations across the country," Mr. Heglas said. "Almost every grocery store has a program with Trex."

A sign on collection bins tells customers the type of plastic that can be recycled, he said, such as bread or dry cleaning bags.

With a ban on single-use plastic bags in some areas, stores are starting to encourage customers to carry reusable bags even for small items such as produce.

When a truck delivers food products to a store, Mr. Heglas said, that same truck will collect the recycled materials in the bin and transport them to the distribution center where everything is consolidated into bales.

Often, the store already has a baler machine because many establishments recycle cardboard. But if not, he added, Trex helps distribution centers install balers. When the Trex-provided trailer is filled, Mr. Heglas said, Trex arranges for a trucking company to drive it to one of two company processing facilities, located in Fernley, Nevada and Winchester, Virginia.

Pricing and demand

When China, previously the major buyer of recycled material, changed its standards last year, the market was flooded, dropping the price of used plastic.

"There is a gross imbalance between supply and demand. It's a buyer's market," Mr. Heglas said.

Though Trex pays its retail partners for used plastic, the price is low. Right now the price paid is 5-cents and 10-cents per pound for plastic bags, film and wrap. That compares to 15-cents to 20-cents last year.

"It has dropped considerably," he said. "With the Chinese export market leaving, it leaves space for at least two companies besides Trex. There is no one else even close to the size of Trex."

Mr. Heglas said that there are three benefits to the NexTrex program. First, even though the revenue is small, the retailers do have a revenue stream from selling their recyclables to Trex. Second, Trex eliminates a waste disposal cost for those materials. Third, the stores can provide green messaging to their customers to recycle plastic film.

Film packaging dilemmas

According to Mr. Heglas, more plastic films and wraps are being developed without thinking about what can be recycled. Whether the plastic can be recycled depends on the product, he said. For example, he said that polyethylene plastic, which is recyclable, is wrapped around timber. This can be recycled because timber leaves little residual dirt. The same polyethylene plastic is wrapped around shingles, but that cannot be recycled because of the residual asphalt and grit, he said.

The recycling of polyethylene laundry bags depends on how they are used. Mr. Heglas explained that laundry bags with discarded surgical gowns or other soiled clothing are contaminated and cannot be recycled.

"That has been overlooked by companies and film designers. They assume that because the packaging is recyclable that every package can be recycled," Mr. Heglas said. "We coined the phrase 'film packaging may be recyclable, but not in today's market.'"

He referred back to the importance of supply and demand economics in the recycling industry. He said that people must remember that Trex recycles plastic bags, wrap and film after they are used. The company constantly reviews market conditions to determine what materials they will accept.

"There's a lot of material available, but the scale of what we accept is less and less," he said.

When China, previously the major buyer of recycled material, changed its standards last year, the market was flooded, dropping the price of used plastic.

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"There is a gross imbalance between supply and demand. It's a buyer's market."

— Trex's Senior Director for Material Management Dave Heglas

Mr. Heglas compared the American recycling industry to a scene in the movie "The Wizard of Oz," where Oz is revealed as a man operating controls when the curtain is pulled back. He explained that the domestic recycling infrastructure is not as strong as people thought, which was revealed after China stopped accepting plastics.

"We rely so heavily on exporting. Collecting material is not recycling," Mr. Heglas said. "You have to have a use for it and you have to have a buyer."

Trex continues to pay its partners for their plastic bags, wraps and films despite the declining market and low prices. Mr. Heglas said that Americans must find a use for recycled plastic rather than shipping it overseas. ♻

Items such as computers and televisions must be taken to specific collection centers, yet these and other appliances sometimes are dumped at the side of the road or in open fields.

Plans in the works for household hazardous waste drop-off center

By Samantha Cottrill | Published on July 25, 2019

The Geauga Trumbull Solid Waste District isn't just hoping to bring glass recycling to Geauga County by the end of the year; the district could also have a new household hazardous waste drop-off facility for Geauga County by the end of this year or early 2020.

Axiom Architects, the company designing the facility, showed preliminary plans to Geauga County Commissioners in mid-June. The facility could cost between $500,000 and $800,000, although no final numbers have been determined as of yet.

Lisa Smith, administrative assistant of the two-county waste district, said planners are in the "beginning stages" of building the facility on a long-term leased property on Merritt Road in Chardon.

"It will be for household hazardous waste, electronics and appliances, and then we will put a drop-off there (for standard recyclables), too," she said. "And it will be fenced in once that facility is operational."

Ms. Smith said the district is aiming to have the facility operational by this November. But Geauga County Commissioner Timothy C. Lennon said the project could be slow moving due to the bureaucracy related to being a government project.

"Being a government project, they (the district) have to go through all the requirements of the sealed bids and all that," he said. "Even from the time you're done with the set of plans and ready to go, you're looking [toward] at least two months before you [can begin construction], and that's if all the stars are aligned and everything's perfect."

Mr. Lennon said discussions on the project have been going on for "some years now," noting that former Commissioner Walter "Skip" Claypool had originally pushed to have a hazardous waste facility in Geauga. Currently, the only facility for Geauga County residents is in neighboring Trumbull County at 5138 Enterprise Drive NW, in Warren.

"Former Commissioner Skip Claypool was really the one advocating for Geauga County to have a location, centralizing Geauga County. So, he was early on looking at multiple different sites in Geauga County, trying to find a suitable location and working with the district. He was super involved in getting this thing to the point where it is," Mr. Lennon said. "If it wasn't for Skip, we probably wouldn't even be talking about this right now."

Mr. Lennon said the new building could act as a "central hub" for recycling in Geauga County.

"Our new building that we're building will be in the center of the county," he said, adding that it should be easier for county residents to dispose their household hazardous waste with a closer facility available. He said the Trumbull County location "is only open certain days of the week throughout the year with [limited] hours of operation."

Currently the waste district facility in Warren is open 9 a.m. to 4:30 p.m. Monday, Tuesday, Thursday and Friday for just appliances and electronics; 9 a.m. to 5 p.m. Wednesdays for household hazardous waste, appliances and electronics; and 9 a.m. to 12 p.m. on select Saturdays for household hazardous waste, appliances and electronics.

The preliminary sketches show the new, steel Merritt Road building to be a total of 7,800 square feet with fenced space facing the road for drop-off recycling.

Mr. Lennon explained that, once operational, the new facility will work similar to the one in Warren where county residents can drive through the facility with their photo IDs to drop off accepted items. He said the hours and days of operation have not been determined yet, but "the idea of doing this is that it will be open to the public and accessible. We're not going to spend this kind of money and not have it open."

Mr. Lennon emphasized that the new recycling center is not meant to replace programs already in place for cities, villages and townships across Geauga County. He added that its main purpose is to offer a more convenient place for Geauga residents to properly dispose of materials such as paint, oil, pool chemicals, computers or pesticides.

"We're still going to support the townships and municipalities and villages 100 percent on what they want to do," Mr. Lennon said.

Some municipalities in neighboring Cuyahoga County, including the Village of Chagrin Falls and Solon, have household hazardous waste drop-off locations for their residents.

Jerry Blakey, multi-certified inspector of the Geauga County Building Department, explained that the new center in Chardon will give communities the option as to whether they want to keep their centers or get rid of them if dumping is an issue.

"The communities are still going to be able to have their [drop-off recycling centers] if they want to keep them," Mr. Blakey said. "[The facility is] just giving them an option to be able to say, 'Hey, we don't want to have to keep dealing with all this dumping and our guys spending 10 hours a week just cleaning up around the containers.'"

Mr. Lennon said a nearby center could reduce dumping of hazardous waste,

What is household hazardous waste?

This refers to any product or chemical that could cause harm when thrown away in the trash. The Environmental Protection Agency considers products that are flammable, reactive, explosive or corrosive hazardous. By not disposing of these products properly, they could injure sanitation workers, contaminate wastewater or septic systems and be dangerous to small children or pets.

To spot HHW, the Geauga and Trumbull County Household Hazardous Waste Electronic Collection Facility suggests looking for these keywords on packaging or labels:

WARNING ⊛ DANGER ⊛ TOXIC CORROSIVE ⊛ IRRITANT FLAMMABLE ⊛ CAUTION

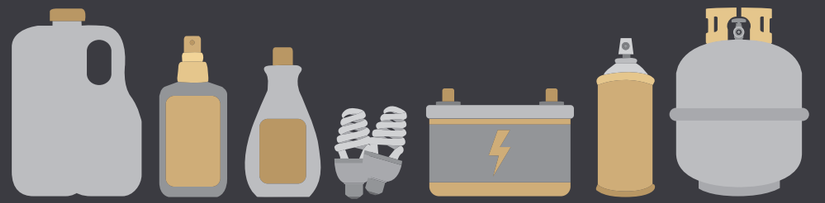
Common hazard symbols: Take items with these labels to your local HHW facility.

Flammable/ self igniting materials | Skin, eye or respiratory irritant | Gas stored under pressure | Material corrosive to skin or metal | Highly unstable or explosive | Poisonous or toxic substance

Dispose of it properly: Here are a few HHW items that should be taken to a facility and not thrown into the trash.

- ⊛ Cleaning products
- ⊛ Vehicle-related chemicals
- ⊛ Fuel: gasoline, diesel fuel, propane cylinders, kerosene, lighter fluid
- ⊛ Gardening chemicals: fertilizer, fungicide, herbicide, pesticide, weed killer
- ⊛ Most paint products
- ⊛ Fluorescent bulbs
- ⊛ Lead acid/car batteries
- ⊛ Nail polish & remover
- ⊛ Bug spray
- ⊛ ANY aerosol container

Call local HHW facilities for a full listing of items.



appliances and electronics at community drop-off centers that are specifically for plastic, paper and cans recycling. To prevent dumping at the new facility, he said the district has looked into surveillance options with the county for the site, but decisions have not been finalized.

"We've looked at different ways to monitor [the facility] with camera systems and license plate readers," he said, but "it gets very expensive when you talk about that. And even in trying to enforce that in the court systems, they usually have bigger fish to fry."

He said the regular recycling drop-off center will be locked when the Merritt Road facility is not open for business.

"I truly believe, and I've said this multiple times in public, that it's proven the honor system doesn't work at these drop-off locations," Mr. Lennon said. "We can't just have 24/7 just do whatever you want because that's where we run into issues where people are illegally dumping materials that aren't supposed to be there."

As for the facility itself, Mr. Lennon said, "We want a quality building that's going to stand the test of time, but also a building that's flexible and that it can also change with the times." ♻

Company turns discarded food into soil, reducing landfill waste

By Tim Tedeschi | Published on July 25, 2019

Talk of recycling brings to mind plastic, paper and glass, but there is another material that even avid recyclers likely toss in the trash that can to be sent to a landfill: food waste.

Those coffee grounds, egg shells and even that moldy cucumber you forgot about in the back of the refrigerator can and should be composted, according to Daniel Brown, co-founder of Cleveland-based Rust Belt Riders. The company, known as RBR, is on a mission to increase food waste recycling and composting in Northeast Ohio.

According to the U.S. Environmental Protection Agency, food waste makes up approximately 22 percent of all municipal garbage in the country, the single largest material that ends up in landfills. In 2015, only 5.3 percent of the more than 39 million tons of food waste generated in the U.S. was diverted for composting instead of ending up in a landfill or incinerator.

"The greenhouse emissions associated with food going to landfills would make it the third largest global emitter of greenhouse gases behind the United States and China," Mr. Brown said. "When food goes to the landfill, it off-gases methane. Methane is like 25 to 30 times more harmful; it exacerbates climate change more than carbon dioxide. For us, every time we divert a banana peel from going to the landfill, that is a tremendous win for slowing climate change."

Mr. Brown said RBR has been picking up food scraps weekly from around 150 different restaurants, schools, businesses, nonprofits and other organizations throughout Northeast Ohio for more than five years. The organic material is then composted in various locations including area community gardens and farms, like Kelly's Working Well Farm in Chagrin Falls, commercial composting facilities or at the RBR production facility on Hamilton Avenue in Cleveland.

At the RBR facility, the collected food waste is combined with wood chips and other woody material from arborists and tree trimming companies and monitored by Director of Soil Nathan Rutz in active compost piles. The piles are monitored for temperature, moisture and aeration, with special care taken to ensure the natural diversity of the soil's microorganisms and fungi to make the soil nutrient-rich for plants.

"[Industrial agricultural practices] invented this idea that chemical fertilizers are the solution to the lack of biodiversity in our soils, and so we're trying to sort of shift that paradigm on its head by saying we can provide all the nutrients that a plant needs by ensuring the right diversity and mixture of biological organisms within the soil itself," Mr. Brown said. "So that can allow you to get away from the needs of artificial pesticides, herbicides and fungicides, and have super healthy plants."

Director of Soil Nathan Rutz, 32, of Cleveland picks mushrooms at Rust Belt Riders in Cleveland. Mr. Rutz said mushrooms growing are a sign of a healthy soil ecosystem and are part of the monitoring of compost piles. (Photo by Tanner Mondok)

With Mr. Rutz's composting processes, RBR can turn a banana peel into potting mix in just under 40 days, Mr. Brown said. The company uses its composted material in a brand of soils called Tilth. Tilth Grow variety is fine, blended compost with peat moss, and the Tilth Sprout variety is a potting mix turbo charged with nutrients, he said.

"This year is the first year that we've made a concerted effort to push the sale of our soils," Mr. Brown said. "So we never really had the infrastructure to basically turn our compost into something usable to a resident or home gardener, so we've been investing in equipment and processes and procedures to better understand how we make a consumer product from this."

On top of being recycled into a useful and marketable product, Mr. Brown said the Tilth soils are full of carbon-inhaling life forms that draw carbon down and exhale oxygen.

"So you have the net benefit of methane emission avoidance by having this material not go to the landfill and then we are in turn able to produce a really high quality, biologically rich soil which can then go to food systems production that if used appropriately through regenerative agriculture can actually drive down carbon," he said. "So it has those compounding benefits to our ecology, our food system, our ability to access food all in a way that helps repair the planet."

Just like the farm to table movement is leading people to question where their food comes from, Mr. Brown said more and more RBR customers are concerned with where their food waste goes. People are questioning their role as merely consumers, he said, and RBR's services give one more opportunity to invest in sustainable systems that reflect their values.

"The buy-consume-dispose psychology has made that the idea that you just throw stuff away," Mr. Brown said. "There is no away. It is someone's backyard, it's in someone's community, and that causes massive environmental justice questions we have to reckon with and have not done a good job dealing with."

Currently, RBR is collecting and diverting more than 40,000 pounds of food scraps each month, Mr. Brown said. When a new business or organization contracts with RBR, they complete a waste audit where opportunities for food waste recycling are highlighted and staffs are educated on what can go into the RBR bins.

The bins are then picked up weekly or more often depending on volume, and customers are given data of tonnage of food waste diverted from landfills, the impact it has on greenhouse gas emissions and the new soil able to be created from their food waste.

"We exchange full bins for clean empty ones, which is another way we distinguish ourselves from land filling services or recycling services," Mr. Brown said. "People think that garbage is smelly and gross, and that's in large part because those cans and bins are being tipped and it's not clean."

Mr. Brown said he hopes to continue to expand residential services soon. Individuals can subscribe for $5 a month to have access to RBR composting drop-off locations in their area, discounts on Tilth products and attend monthly workshops for free. A pilot program of residential curbside service in select communities is also in the works, which would be especially helpful for apartment dwellers and others who cannot manage their own compost piles.

"So if you think about the good old days when the milk man would come to your house, drop off fresh milk, take your empty bottle, we're doing that a bit in reverse," he said. "You put your full bin outside and exchange your full bin for a clean empty one. All of your household food scraps can go in that."

Rust Belt Riders co-founder Daniel Brown, 30, of Cleveland stands in front of some active compost piles. (Photo by Tanner Mondok)

While RBR is happy to work together with businesses and individuals, Mr. Brown said he is also thrilled when people take what they have learned about composting and start managing their food waste without RBR's help.

"You're going to have just as many opportunities to learn about the process so that at a certain point along the way you might want to stop using our service and start composting on your own," he said. "We want people to be self sufficient to the degree that they can, but if it's easier and more accommodating for them to use our service, that's what we're here for."

While contamination is an ongoing problem in the recycling of paper, glass and plastics, Mr. Brown said RBR sees less than 1 percent contamination rates, which he credits due to the company's commitment to education and personally working with clients.

"Most of our clients know the members of our team on a first name basis. I know very few of those same people who know the name of the people that pick up their Dumpster or recycling container," Mr. Brown said. "Our success is rooted in large part by the relationships we have maintained and cultivated with our clients, and so I think that that goes a really long way."

Food waste recycling can also help lower the contamination rates for other commodities recycling efforts, he said, with lingering pasta sauce, peanut butter and other food scraps being a major source of contamination of glass and plastic jars and bottles.

To learn more about RBR's commercial and individual services and Tilth soils, visit www.RustBeltRiders.com. ♻

Former neighbors Linda Levi of Chagrin Falls and Bob Fay now of Bainbridge have partnered with the Chagrin Falls Exempted Village School District to promote recycling efforts through various programs, contests and more. (Photo by Tanner Mondok)

Retirees teach next generation the importance of recycling

By Tim Tedeschi | Published on August 1, 2019

While serving in the U.S. Army during the Korean War, Bob Fay learned the importance of using resources wisely.

"I learned how to get along with a very little bit of water. It was very cold there, everything was kind of frozen, so we used to melt ice for water, for showers and stuff like that we used snow," Mr. Fay, 88, of Bainbridge said. "If you are short of one thing, food, or you're short of air, or short of water that's the main focus of your life."

Mr. Fay was also struck by stories of people valuing resources, including when Henry Ford gave his part manufacturers specific dimensions for the wooden boxes they shipped parts in so that the wood could be broken down and used as floorboards in his Model T.

"That made an impression on me. Every time I see something thrown in the street or something wasteful, it really bothers me," he said. "It's bad for our country; it's a bad way to bring kids up."

Those experiences have stuck with Mr. Fay throughout his life, and he has continued to find ways to promote reusing and recycling resources as much as possible, most recently through a partnership with his former Chagrin Falls neighbor and friend Linda Levi. The two have teamed up to promote recycling efforts in the Chagrin Falls schools, including a month-long pilot program in March that focused on recycling single-use plastic bags and promoting reusable bag use.

"I would visit him and we would talk about all the plastic bags along the highway and all the waste and everything, so we've kind of had this idea together…to do a program to bring awareness," Ms. Levi said. "We live in a beautiful setting. We just feel like everybody counts, students, everybody here can do their part."

Ms. Levi, a retired special education teacher in the Kenston Local School District, approached Chagrin Falls Exempted Village School District Director of Curriculum and Instruction Becky Quinn and school board member Mary Kay O'Toole and got the program started. Students decorated giant bins to collect plastic bags, participated in essay and drawing contests, produced videos about recycling, gave recycling fun facts during morning announcements and helped set up a display about recycling and plastic bag consumption at the Chagrin Falls Heinen's grocery store, Ms. Levi said.

Mr. Fay said one of his favorite parts of the pilot program was the district's collection of around 100 reusable cloth bags. Mr. Fay donated the bags to the St. Aloysius Church food bank in Cleveland where he volunteers so that food can be given out with reusable bags rather than plastic bags.

"How many cloth bags do you have in a closet that aren't being used? You probably have 20 or 30," he said. "So they brought all these bags in school and we were overwhelmed there were so many of them."

Ms. Levi said the goal is to continue to promote awareness and action in Chagrin Falls schools and to expand to Kenston, eventually developing a cafeteria program where students can sort all of the recyclables that are part of their lunch right after eating.

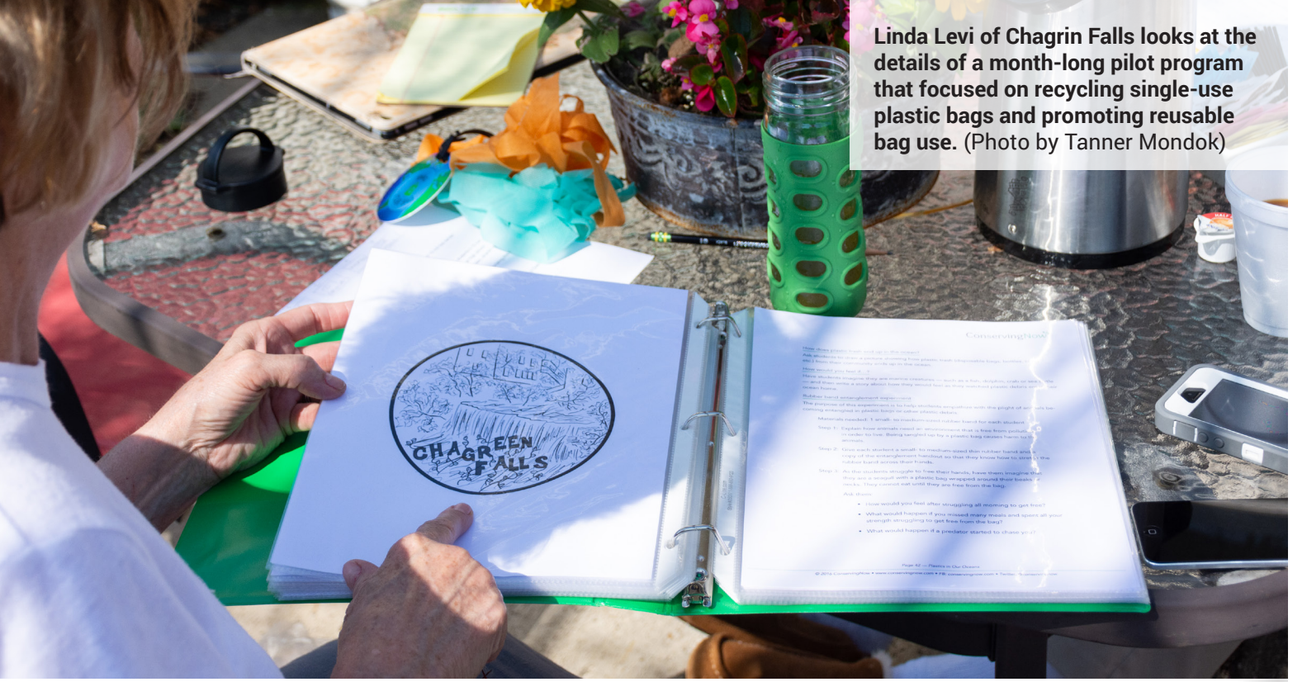
"Our goal is to have a program in the cafeteria, because anyone who spends a little time in the cafeteria knows how much waste there is," she said. "Kids, when they're learning how to read and write, why not read, write and recycle? They love to sort, that's a natural quality that kids have that they can start sorting their recyclables. I think they would be on board with that."

Keeping with the theme of reusing resources, the duo is hoping to reuse a former invention of Mr. Fay's to encourage reusable bag use.

Mr. Fay worked in the drug division of Bristol Myers Squibb and developed a patent for a clip that has a suction cup on one side and a hook on the other. Originally designed to stick to bathroom mirrors and hold pill bottles to remind people to take their medicine, Mr. Fay and Ms. Levi are now hoping to give the clips to students to use in their kitchens, garages and cars as reusable bag holders that will remind people to grab the bags before going to the store.

"We would like to give them to the kids so the kids could bring them home and with a little message to say, 'Hey, mom here's this little stick and clip that you can put and hang a bag on, hang the grocery bag on,'" he said. "I think this would be a very good aid."

While working for Bristol Myers Squibb, Mr. Fay also helped to organize the infant formula distribution pilot program that eventually became the Special Supplemental



Linda Levi of Chagrin Falls looks at the details of a month-long pilot program that focused on recycling single-use plastic bags and promoting reusable bag use. (Photo by Tanner Mondok)

Nutrition Program for Women, Infants, and Children known as WIC, and later developed a product that would help make cleaning cloth diapers easier and reduce reliance on paper diapers that end up in landfills. The Diaper Duck allows parents to rinse and ring out cloth diapers over the toilet without having to touch the diaper and waste.

"There's a tremendous number of paper diapers that are thrown in [the trash]. People just take it and fold the diaper together and leave human waste in there and throw it in," Mr. Fay said. "Any human waste should be treated in a sewer system. There's viruses and infectives in it.

"Anything we can do to get people thinking about reusing, recycling and not wasting things, that's the name of the game."

Ms. Levi said partnering with local school districts creates an intergenerational effort to increase recycling efforts, as children learn sustainable habits and adults, including senior citizens, can help educate and model positive behaviors.

"Bob, given his age, he wants to make a difference. He's someone who's 88 and he still wants to make a difference and I'm so inspired by him," she said. "I think our seniors are an untapped resource too because Bob doesn't want to sit around, he wants to be productive and I really respect him a lot. We've been friends for a long time, former neighbors, and he's passionate about this country and wanting to help, and so am I."

Mr. Fay credited Ms. Levi with keeping their operation organized and focused, and said he is happy to continue to promote reusing and recycling programs to build a sustainable future.

"If you just can hook on something that 10 percent of the people will take and say, 'Gee, that's a good idea,' and get them interested in doing this, we're going to make it a better world. No question about it," he said. "If we drop the ball again, I'm going to be gone. I'm not going to be here for the next time, but the [next generation] will make a difference." ♻

SOURCES & RESOURCES

- ♻ Cuyahoga County Solid Waste District
- ♻ Geauga Trumbull Solid Waste
- ♻ Waste Management: Waste Disposal & Trash Removal
- ♻ Kimble Recycling & Waste Disposal
- ♻ Rumpke Recycling & Waste Disposal
- ♻ Republic Services: Waste Disposal and Trash Removal
- ♻ Glass Recycling Coalition
- ♻ Owens-Illinois: Glass Bottle Manufacturing
- ♻ Ohio Valley Waste Service Inc.
- ♻ Ohio Environmental Protection Agency
- ♻ National Geographic
- ♻ U.S. Environmental Protection Agency
- ♻ Heinen's Grocery Store
- ♻ Giant Eagle Supermarket
- ♻ Plastics Industry Association
- ♻ Earth911
- ♻ Mother Nature Network
- ♻ Princeton University: Office of Enviornmental Health and Safety
- ♻ Busch Systems
- ♻ American Disposal Services
- ♻ Metro Creative Connection
- ♻ Trex Company, Inc.

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