



# THE RECYCLING CRASH

After the Chinese markets crashed earlier this year, bales of recyclables began to pile up at material recovery facilities across the country.





# China's Ban on Certain Foreign Waste Takes A Toll on Local Recycling Programs

For the past decade or two, the United States has sent the bulk of its recycling to China, where it has helped to fuel that country's manufacturing boom. In January, China stopped accepting 24 recyclables, upending markets and forcing recyclers to find other outlets. **Until new markets are developed, the collapse of the China market will be felt in municipal recycling programs across the state.**

BY AMY BOBB / ASSISTANT EDITOR

If you're like most Americans, you probably have not given much thought to what happens to that plastic bottle, glass jar, or newspaper you put in your recycling container. You figure it is being recycled somehow, and by keeping it out of the landfill, you are doing your part to make planet Earth a better place.

This "out-of-sight, out-of-mind" mentality came to a screeching halt earlier this year when the recycling industry was rocked by action out of China. What most people did not realize until then was that the items they had been recycling, week in and week out, were likely being shipped to China, the

world's largest consumer of recyclables.

On January 1, in an anti-pollution crackdown, China implemented a ban on certain recyclables from other countries, most notably mixed paper (such as junk mail) and mixed plastic (those labeled three through seven), and put in place stricter rules about the level of contamination it would accept on other materials.

As a result of a decision made half-way across the globe, what can now go in your recycling bin has likely changed, and if it hasn't yet, it will soon. Without China as a major market, recyclers are forced to find other outlets, and until new markets pick up the slack, what

was once considered a recyclable has become refuse.

And communities and consumers are scrambling to adapt to the new realities of recycling.

## Responding to the crisis

For some communities, China's ban has forced local recycling programs back to the basics and shifted their focus to materials with traditionally strong markets.

In Lancaster County, after the solid waste management authority boiled its curbside recyclables down to what it's calling the "big four," Mount Joy Township quickly jumped on board, helping





it be recycled? When in doubt, throw it out, we tell them now. One of the reasons we are in the situation we are today is because of contamination in our recycling stream.”

Meanwhile, other communities are exploring whether it makes sense to halt recycling altogether until the marketplace rebounds.

Rye Township in Perry County is getting ready to advertise for a contract for the new year and is wondering if it should give up recycling for a year or two until the markets come back. Currently, the township’s 2,350 residents recycle at a drop-off location, but trash at the site has been a constant battle, and the cost for hauling the materials away continues to rise.

“People take advantage of it and leave trash there — TVs, mattresses, you name it,” Ken Quigley, chair of the board of supervisors, says. “The issue is cost. It’s costing us \$1,400 a month to have everything picked up, and it’s hard on the budget.”

Recently, some citizens, unhappy about a possible reduction in recycling, have suggested going to curbside instead.

“We’re a rural township, and no hauler is interested in bidding on this,” Quigley says. “The vendors tell us there is no market for much of anything right now except for cardboard.”

This year, Pennsylvania’s recycling law celebrates its 30<sup>th</sup> birthday, but the future of recycling has never looked

to spread the word that only corrugated cardboard, plastic bottles and jugs with necks, metal food and beverage cans, and glass bottles and jars will be collected at the curb.

“Plastics will have the biggest learning curve,” manager Justin Evans says. “Residents will have to look at a bottle and decide does it have a neck and can

## Recycling’s success story



Pennsylvania’s recycling program has been largely a success in the three decades since Act 101 of 1988 ushered mandatory recycling into the state. According to the state Department of Environmental Protection (DEP):

- At least 94 percent of Pennsylvanians have access to recycling through curbside pickup or drop-off programs.
- Among Pennsylvania’s 1,454 townships of the second class, 929 offer recycling programs to their residents. Of those, 273 townships are mandated to recycle because of their populations, and another 656 townships provide recycling programs voluntarily. The act requires curbside programs in municipalities with a population exceeding 10,000 or between 5,000 and 10,000 with a density of 300 or more people per square mile.
- Between 2010 and 2015, Pennsylvania recycled

about 48.2 million tons of materials, an amount equal to removing more than 45.3 million tons of carbon dioxide emissions or taking more than 14.6 million cars off the road.

- Recycling plastic, metal, and paper products generates more than \$1.7 billion in state and local government tax revenues and has created more than 170,000 direct and indirect jobs in the state, according to 2015 data from the Pennsylvania Recycling Markets Center.
- Since 1988, DEP has distributed more than \$900 million in Act 101 grants to municipalities. This revenue is raised through a \$2-per-ton recycling fee on all non-recycled waste (except ash) disposed of in landfills or processed by resource recovery facilities. Last year, the fee, which had originally been slated to phase out in 2020, was renewed indefinitely by the legislature.



Since Act 101 of 1988 was passed, recycling has become a way of life for most Pennsylvanians.



murkier. Until adjustments are made and new markets emerge, one thing seems clear: Surviving this latest crisis may hinge on becoming better educated on the economic realities of recycling today and improving recycling practices.

"If we're going to continue to recycle what's still viable, we must make sure that it's done right," Evans says.

### A shift in recycling

Thirty years ago, Pennsylvania developed the most sweeping recycling program enacted by any state at that time. The mandate of curbside recycling in hundreds of communities that meet certain population requirements has reduced garbage going to the landfill, created markets for recyclable materials, and generated jobs that helped to boost the state's economy. (See the box at left for more about recycling's success story in the state.)

Three decades later, recycling has become a way of life for most Pennsylvanians, and by all accounts, it has been hailed a success. Today, more than

**"We looked at marketability and wanted to ensure that the materials could still be sold six months, a year, two years from now."**

Recycling has changed.  
Just remember the **BIG 4**.



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**BACK TO BASICS:** In response to the market crash earlier this year, the Lancaster County Solid Waste Management Authority boiled down the recyclables collected curbside to the "Big 4" and instituted a public awareness campaign to spread the word.

Have you heard?  
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|--|---|-------------------------------------|-------------------------------|

All other items do not belong in your recycling bin.



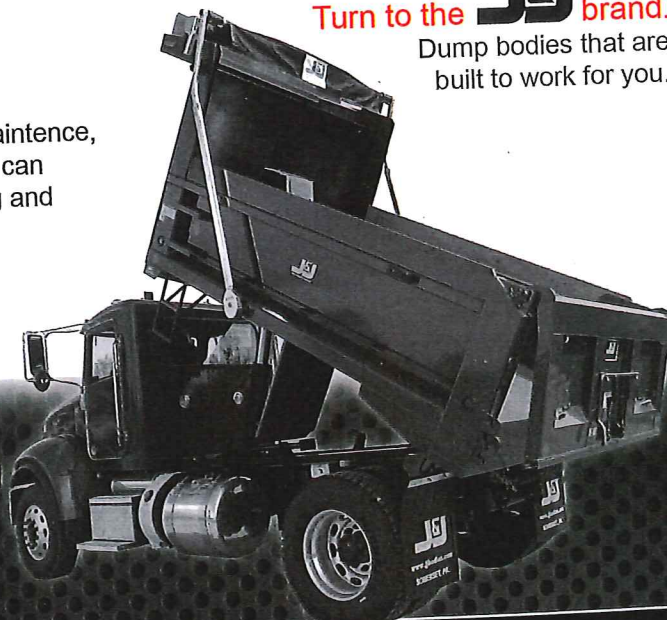
It's okay to throw *everything else* away. It will be turned into energy. Lancaster County has an advanced waste-to-energy process that converts these materials into renewable energy, powering local homes and businesses and helping to reduce our reliance on non-renewable sources of energy. So, when in doubt, throw it out.

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11.6 million residents — about 94 percent of the state's population — have access to recycling, including about 79 percent who have the convenience of curbside pickup.

Over the years, recycling programs have faced challenges as markets ebbed and flowed. State Secretary of Environmental Protection Patrick McDonnell reminds townships that Pennsylvania has a strong recycling infrastructure, and it will rebound again.

"We expect the processors of recyclable materials will adjust accordingly to the current changes in the marketplace," he says, "just as they've adjusted to other changes in the past few decades."

Still, the latest news out of China has sent a large shock wave through the recycling industry and caused a major disruption to the recycling loop, which consists of the user or sorter, the processor, and the buyer.

"Suddenly, the buyer went away, and there was nowhere for the material to go," Kathryn Sandoe, chief communications officer at the Lancaster County Solid Waste Management Authority, says.

With limited markets, communities mandated to recycle are re-evaluating what items are valuable enough to still collect and sell. Earlier this year, Lancaster County, one of the first areas in Pennsylvania to react to the market collapse, cut out some long-time recycling staples and trimmed its curbside recycling to four items that it believes have had traditionally strong domestic markets.

"We looked at marketability and wanted to ensure that the materials could still be sold six months, a year, two years from now," Sandoe says.

With such a major change to its program, the authority has focused its efforts on re-educating people on what can be recycled and how to prepare it (*flatten cardboard, empty and rinse con-*

## "Plastics will have the biggest learning curve. Residents will have to look at a bottle and decide does it have a neck and can it be recycled?"

tainers, remove lids).

"We know we are challenging many long-held beliefs of recycling, and the initial reaction has been surprise and shock," she says, noting that she's hopeful that curiosity, understanding, and finally adaptation will follow.

To get the public on board with the new guidelines, the authority has been working with the county's 20 trash haulers and 44 municipalities with curbside programs to prioritize education that will encourage compliance.

"We still have an incredible education effort ahead of us," Sandoe acknowledges.

For avid recyclers, the current situation can be difficult to accept.

"The response from our folks has been disappointment and some frustration," Bill Laudien, manager of Lancaster Township in Lancaster County, says about the authority's decision to focus on just four reliable recyclables. "They may understand the situation, but they are still disappointed."

About four or five years ago, he says, residents embraced single-stream recycling, where all recyclables could be placed in the same bin. The volume of trash diverted to recycling doubled from 14 to 28 percent. ➤

## PLASTICS: Look at shape, not number

Not all numbers are created equal, especially when it comes to those little recycling numbers inside an arrow triangle on the bottom of plastic containers. That little triangle, by the way, is called the "mobius loop," and it indicates that an object is *capable* of being recycled, not that it has been recycled or even will be accepted in all recycling collection systems.

"The consumer sees that number and thinks it can be recycled," Kathryn Sandoe of the Lancaster County Solid Waste Authority says.

Not necessarily true. The number identifies the type of plastic resin used to make an item, but the numbers are not regulated, and neither the state nor federal government provides oversight of their use, she says.

Instead of looking at the number, focus on the shape of the container, Sandoe advises. Plastic bottles, jugs, and jars with necks, such as water or sports drink bottles, milk jugs, or detergent bottles, are accepted in most post-China recycling programs. Plastic clamshells and other containers, even if they have the same recycling number (1 or 2) as commonly accepted bottles and jugs, are no longer widely collected within many recycling programs.

To prepare plastic bottles and jugs for market, caps and lids should be removed and thrown away since they are made from a different kind of plastic, and containers should be empty and clean.

**When recycling plastic, focus on the shape of bottles and jugs, instead of the recycling number stamped on the bottom of containers.**





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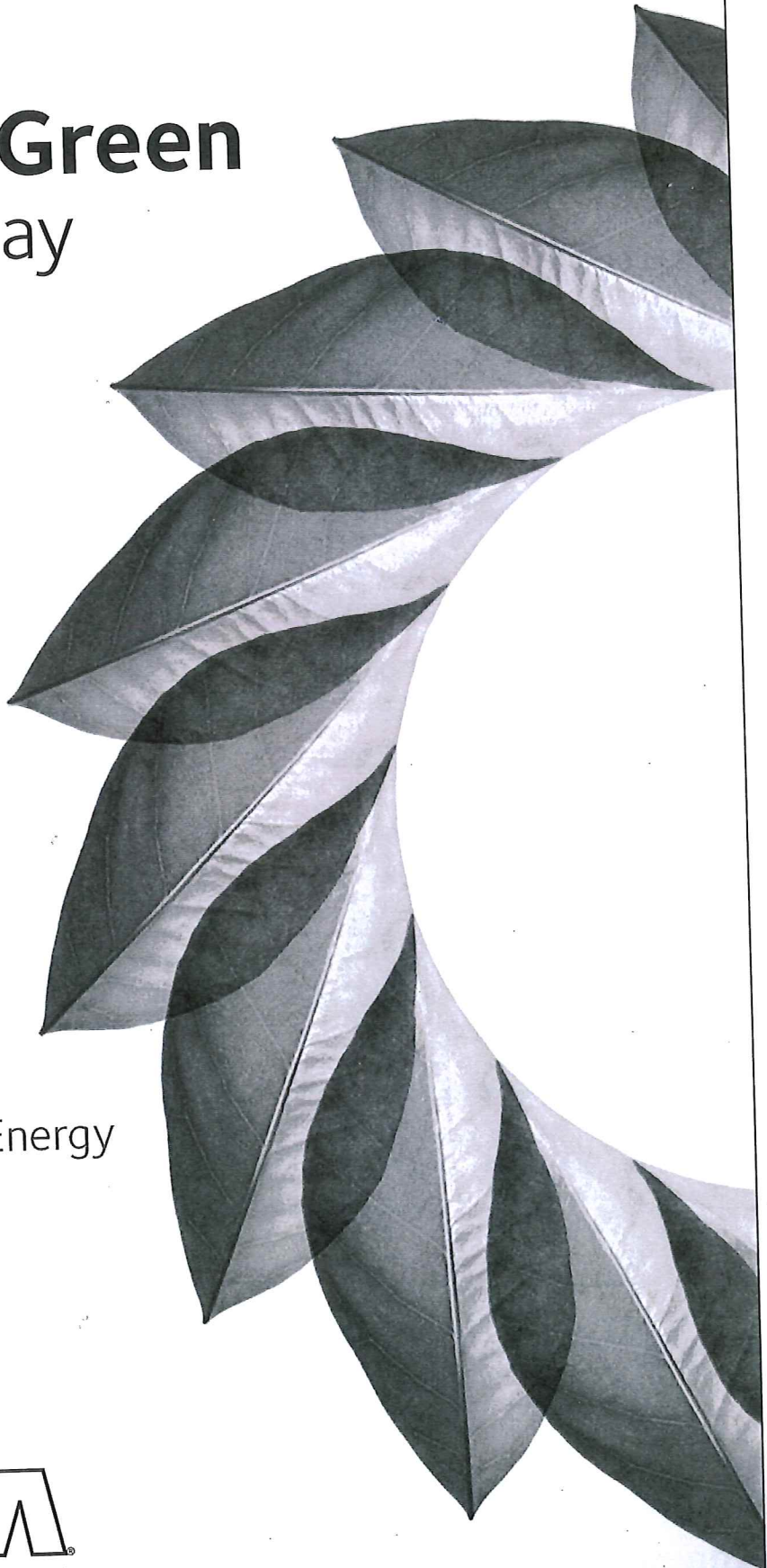
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**“If we’re going to continue to recycle what’s still viable, we must make sure that it’s done right.”**

“After seeing that success, they feel this current move is a step backward,” Laudien says.

To ease the blow, the township has tried to find end markets for some of the other recyclables no longer accepted at the curb, but it hasn’t had much luck.

“It has proven to be a challenge,” he says. “There just aren’t enough good markets out there right now, especially for certain items like magazines.”

**Still worth the effort?**

In communities where recycling is not mandated, a big question looms: Is

recycling, long viewed as an environmental success story, still worth the effort?

Given the high contamination rate of recyclables in Crawford County’s program, the immediate answer there has been “no.” Citing difficulty keeping trash out of its recycling stream, increasing costs, and a withdrawal of funding, the county’s solid waste authority ended its recycling program last year. Drop-off bins, which had been strategically placed in eight locations throughout the county, were pulled in December.

The decision to end recycling has been particularly hard in West Mead

Township, where the community has long been proud of its two-decade history of recycling. In fact, recycling in the area can trace its roots to the township’s volunteer fire company, which created and ran a community recycling program until the county took over.

“Our township has been a big proponent of recycling through the years so a lot of people are sad to see it go,” secretary-treasurer Jill Dunlap says. “It’s a shame.”

Still, she understands the county’s reasons for discontinuing it.

“People were putting trash in the recycling,” she says. “While many residents took advantage of recycling and

**Combatting contamination**



Lancaster County Solid Waste Management Authority’s single-stream drop-off bin is regularly contaminated with styrofoam, plastic bags, single-use containers, and newsprint.



Getting people to comply with recycling rules is a large hurdle that every program must overcome. In spite of a sign clearly indicating not to place plastic bags in Lancaster County Solid Waste Management Authority’s recycling bin, residents continue to drop off bags containing recyclables. (Photos at left and above courtesy of the authority.)



To overcome “wishful recycling” (trying to recycle things that aren’t recyclable), the Lawrence-Mercer Counties Recycling and Solid Waste Department places clear, concise instructions at its big blue drop-off bins, including a list of commonly confused items identified as recyclable or not. (Photos at top and bottom courtesy of the department.)

**“Contamination is a huge part of the problem and one of the reasons we are in this situation today.”**





did it right, a few misused it, and that's all it takes."

In Erie County, Greene Township has been operating a curbside recycling program using its own collection trucks and manpower for about 20 years, but as costs rise and income from the sale of recyclables falls, the voluntary program is now in jeopardy.

"It's costing us a ton of money," supervisor and secretary John Bartnicki says. "It wasn't meant to make us money, but we don't want to lose as much as we have either."

As the supervisors evaluate costs, they are also discussing the possibility of dropping the curbside service. They hope to either find a hauler willing to take it over or go to drop-off bins instead, but with only a quarter of the residents participating, they are questioning how valuable the program is anymore, particularly in today's tough marketplace.

"We are always looking for ways to save money, and this has been lurking as a problem even before the China crisis," Bartnicki says.

To the south, Mercer and Lawrence counties are also contemplating the future of recycling. With a contract set to expire December 31, the counties' combined Recycling and Solid Waste Department is not sure its "big blue bin" recycling program, created to help those without a curbside program to recycle, will survive.

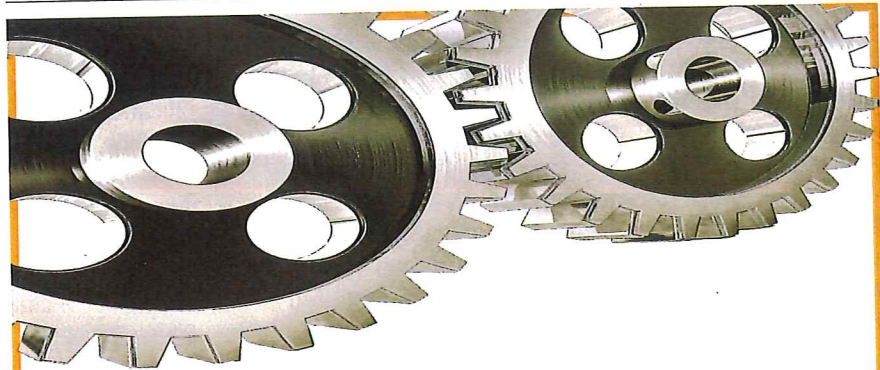
After tracking what has occurred in China and seeing the plunge in global markets this year, director Jerry Zona expects to see a drastic price increase when bids on a new contract come back this fall.

"If it goes up too much, we will likely have to scale back on sites or materials we accept," he says, adding that ending the program altogether may even be on the table.

He's been preparing the public for such a possibility by trying to get the word out about the current situation. Still, he recognizes that any changes to the recycling program will be tough for some residents to accept.

"People have become so ingrained with recycling that it's become a way of life and one of the services they expect," Zona says. ▶

**"Single-stream recycling is a great way to make recycling more convenient, but it does result in a lot of 'wish' recycling."**



## Get into Gear

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**REGISTRATION:** To register for this seminar, go to [engineers.psats.org](http://engineers.psats.org).

**CREDITS:** The registration fee includes five professional development hours or six PMGA Public Works credits for attending (*can use as elective credits if enrolled in another PMGA track*).







### Reducing contaminants

For a long time, China's insatiable appetite for recyclables masked the problems of contamination in the nation's recycling stream. (For more on the role China has played in our current state of recycling, see the box below.)

"In reality, what caused the issue we

are having now is contamination in the recycling bin," Sandoe says. "Just because something has the potential to be recycled doesn't make it recyclable."

Part of the problem can be traced back to how easy recycling had become, especially once many programs implemented single-stream collection, allow-

## Recycling's reliance on China

If you want to understand where we stand with recycling today, you will need a quick tutorial about how recyclables became, by volume, the largest U.S. export.

Kathryn Sandoe, chief communications officer at the Lancaster County Solid Waste Management Authority, refers to it as "pulling back the curtain" on recycling.

Over the years, recycling had morphed into a gigantic global trade thanks to China's voracious appetite for U.S. recyclables, which it turned into new products and sold back to the United States and other countries. Freighters would carry these goods to consumers around the globe and return home with scrap paper and plastics stuffed into its now-empty containers.

In the United States and elsewhere around the world, recyclables collectors found it more economical to ship their items to China than to local markets. Before long, China was consuming 30 percent of the world's recyclables and more than half of its mixed paper and mixed plastics.

"From the U.S. end, we always had some contamination in our curbside recycling, things that didn't belong there," Sandoe says, "but when we went to single-stream recycling, the rates of contamination really rose."

She estimates that 20 to 40 percent of what consumers put in their recycling bins is trash, so it became the job of the materials recovery facility (MRF, pronounced "murf"),

which processes the recycling, to pull out what trash it could before shipping the recyclables to market.

"For a long time, the acceptable rate of contaminants in China was 5 percent," she says, "so for the last 10 to 15 years, China was taking in 5 percent trash. That's a significant amount of trash it was importing."

While its economy was growing, China was willing to sort through the recycling it received and pull out items of value while discarding the rest. However, public sentiment shifted, and the Chinese people, no longer wanting to sacrifice their environment and health for economic growth, demanded a change. In 2013, China enacted "Operation Green Fence," a 10-month initiative to try to filter out trash coming into the country.

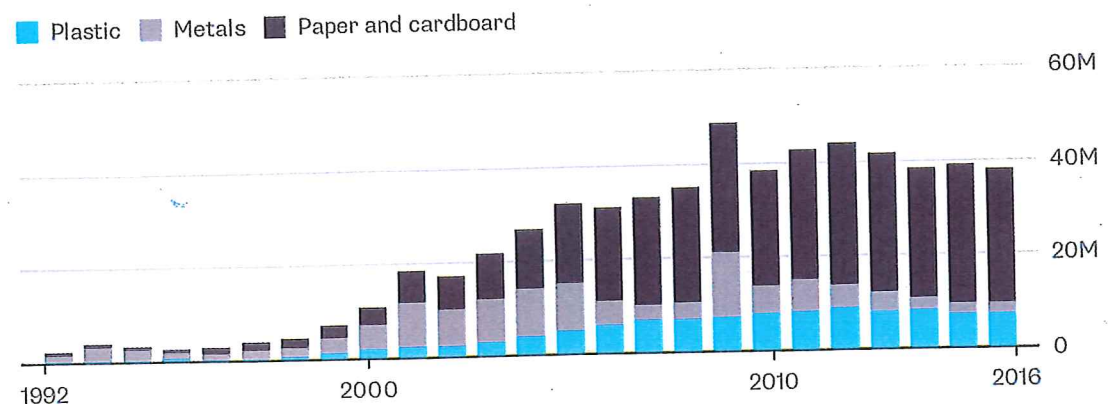
"This should have been our warning to clean up our act," Sandoe says, "but we didn't take it seriously. We thought they needed our material."

Then in the summer of 2017, with what she calls "a single stroke of the pen," the Chinese government enacted a new "National Sword" policy, which went into effect January 1 of this year, banning 24 types of recyclables and setting a much tougher standard for contamination levels.

The acceptable rate of contaminants dropped from 5 percent to half a percent, which Sandoe notes is impossible for a MRF to meet.

### How the World Relied on China

Total weight of scrap material imported by China each year, measured in metric tons



Source: United Nations Statistics Division

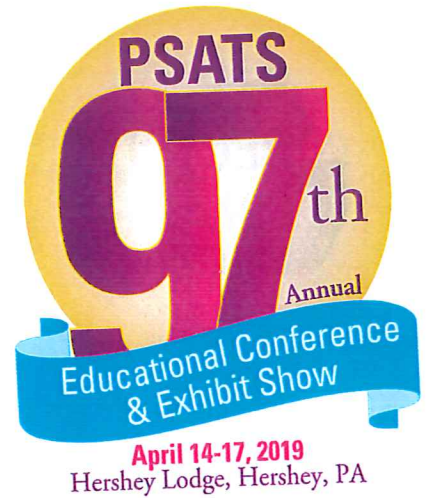
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Chart courtesy of Bloomberg.com.



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**“People have become so ingrained with recycling that it’s become a way of life and one of the services they expect.”**

ing all recyclables to be placed together for pickup and sorting later at a processing facility. Too many people made assumptions that just about everything could be recycled — tin foil, drinking glasses, plastic toys, even garden hoses — when in reality they couldn’t.

“Most people equate recycling with what they put in the bin. They’re not sure what happens after that, but they assume it’s turned into something,” Sandoe says. “As an industry, we didn’t do a great job of educating people on the wholistic approach to recycling.”

So now that China has lowered its boom, communities that still want to recycle — whether because of a state mandate or because they believe it’s the right thing to do — must find ways to provide a clean quality product. According to Earth911.com, a website dedicated to encouraging lower waste, the answer to U.S. recycling woes starts with clear recycling guidance for consumers, who sort recyclables from the rest of their waste. An effective education program could help to put an end to what the industry calls “wishful recycling,” trying to recycle things that aren’t recyclable.

Many solid waste handlers have begun asking customers to be more

diligent about their recycling habits, and townships can help spread the word. “When in doubt, throw it out” has become the mantra of the new post-China recycling guidelines.

“Single-stream recycling is a great way to make recycling more convenient,” Zona notes, “but it does result in a lot of ‘wish’ recycling. People will put a plastic toy in the bin simply because it’s made out of plastic, and they think it must be recyclable.”

To help educate people about what can and cannot be recycled, Zona’s department streamlined its education program into clear, concise instructions at its drop-off bins that identify recyclable items by a “yes” or “no.”

## Separating at the curb



Over the years, Centre County has bucked the trend to go to single-stream recycling. Instead, residents place recyclables in one bin at the curbside, and the collectors sort the items into separate compartments at the curb. The result is a clean product that is more marketable. (All photos courtesy of Centre Region COG.)



**BOTTOM PHOTOS:** In 2017, more than 1,483 tons of mixed paper and cardboard, 717 tons of clear, green, and brown glass (separated by color), and 258 tons of mixed plastics were collected in the Centre Region Council of Governments’ curbside residential program.





"Contamination is a huge part of the problem and one of the reasons we are in this situation today," Zona says. "It can be difficult to get people to understand. If we only want plastic bottles, that means no clamshell containers, no yogurt containers, no toys, no bags."

For the most part, people try to recycle properly, he says, and when they don't, enforcement remains an important part of his counties' recycling program. Cameras installed at drop-off sites help identify people who leave trash or consistently recycle wrong. Warnings and eventually citations are handed out. Last year, approximately 30 people were cited, and around a dozen people have received citations as of August this year.

Another way to reduce contaminants, some experts point out, would be a return to basics. When recycling got its start in Pennsylvania in the late 1980s, curbside programs required separation at the source, and residents sorted recyclables into separate bins for paper, glass, and plastic.

For a variety of reasons, Centre County had resisted going to single-stream recycling over the years. Today, it is reaping the benefits of this decision.

"We have a very clean product," says Pam Adams, regional refuse and recycling administrator for the Centre Region Council of Governments. She estimates the county's contamination rate to be 1 to 5 percent, compared to 20 to 40 percent nationally. "Our vendors like our product."

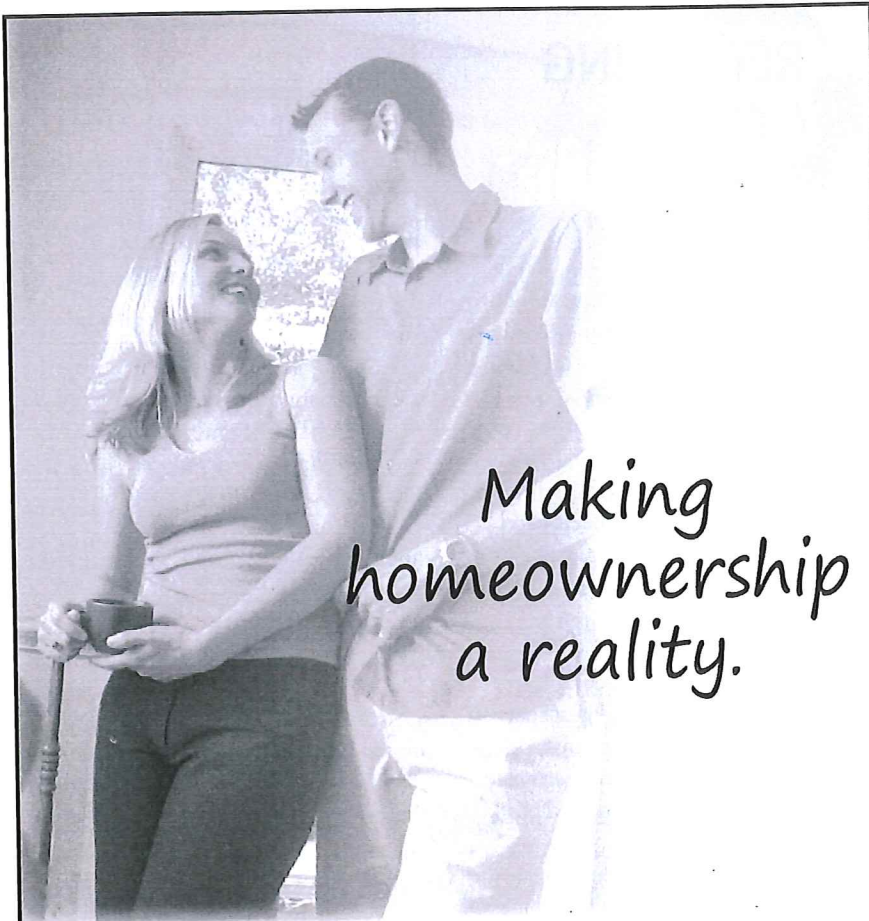
Although homeowners place their recyclables in one bin at the curb (*with newspaper put into a separate paper bag*), the hauler spends time separating the items by category into a multi-compartment truck, only taking what is recyclable and leaving behind anything that is not, along with a note of explanation.

"We see it as an opportunity to educate residents about why certain items can't be recycled," Adams says.

This finicky collection sometimes results in phone calls or complaints, she admits.

"Some people get frustrated and tell us we're backwards," she says, "but it has given us a nice, strong product, and we can handle the dips in the market."

Several years ago, the county had looked into switching to single-stream



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recycling, even engaging a consultant to study the idea, but in the end, it decided that the risk of additional contamination overrode any potential increase in the recycling rate, which was already remarkably high at 90 percent.

"I can tell you that right now in this current market situation, it feels good and easy to explain why we're not doing single-stream recycling," Adams says.

### The future of recycling

While it remains to be seen how recycling rebounds from this latest market setback, in the short term at least, prices for local programs will almost certainly rise as recyclers pass on increased costs to customers.

After the China markets collapsed this year, Lancaster Township became



the first community in Lancaster County to rebid its hauler contract. Where previously it had cost nothing to pick up, transport, and process recyclables, the new bids included an annual charge of approximately \$37 per household, causing the overall waste bill to jump from \$206 to an estimated \$250 annually.

"Our residents are going to feel the pinch for sure," manager Laudien says.

If fewer materials are recycled in a municipality, the funding it receives from state recycling performance grants will also likely drop because it is partly based on total tons recycled.

While the economics of recycling are shifting, some in the industry see

**Remember, recycling is just one component of a "greener" lifestyle.**

this latest crisis as just another blip in the inevitable rise and fall of markets.

In his 25-plus years in the industry, Zona has watched the recycling markets fall and rebound three other times. Eventually, he believes the markets will once again work their way through this latest crash, although he says it could take two years or more.

"We're at the very bottom of the valley right now," he admits.

While the system is not necessarily broken, Zona says, it is in need of an adjustment, but he remains hopeful that domestic markets will eventually pick up the slack caused by China's recent ban.

"We had become too reliant on China," he says, "and the contaminant rate of our recycling had become too high."

Pennsylvania's recycling law offers flexibility so that municipalities can adjust their recycling programs to market conditions if they so desire. Of the eight recyclable materials listed in the law, mandated municipalities must recycle at least three of them.

Still, DEP advises municipalities not to make too drastic of a change to their recycling programs as the current market instability will eventually dissipate.

"The marketplace for recyclables is global," McDonnell says, noting that markets for quality materials exist around the world. DEP also works on market development closer to home through the Pennsylvania Recycling Markets Center and invests \$800,000 a year in developing markets in the state for recycled materials.

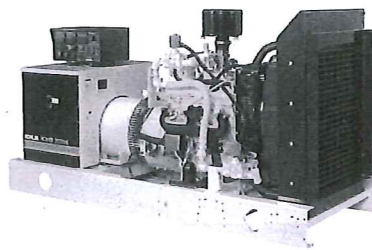
Time will tell if facilities or plants will eventually emerge to convert recyclables into new materials and products, but until something happens on a large scale, recycling will depend on localized

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# What to do about the **GLUT OF RECYCLED TVs**

The Washington Township recycling and transfer station in Franklin County has a serious problem: too many TVs and computers — so many, in fact, that in August it imposed a two-month moratorium on accepting any more electronics until the township could sort through, pack up, and get rid of the ones it had.

“We had no more room left in our warehouse,” township manager Jeff Geesaman says. He estimates that at least six tractor-trailer loads of electronics will have been packed up and readied for shipment during the moratorium.

Each 10-ton truckload costs the township about \$3,000 in labor and equipment, he figures. Despite the cost, the township feels compelled to continue the service.

“Our transfer station and recycling center were paid for with DEP grants,” he explains, “and there’s nowhere else for people in the area to go with their old TVs. They can’t be put in the trash or sent to the landfill.”

This glut of e-waste, which is a problem throughout the state, can be traced back to unforeseen problems with the state Covered Device Recycling Act of 2010, which prohibits electronics from being disposed of in landfills. In the law, a formula used to

calculate the amount of electronics that original equipment manufacturers must accept for recycling is based on the weight of electronics they sold in the previous two years.

Because the weight of what’s being reclaimed (*older, bulky, heavier TVs and computer monitors*) exceeds the weight of the lighter-weight flat-screen devices sold today, manufacturers reach their designated limit faster and therefore recycle far fewer devices than they’ve sold. The result is a glut of e-waste at the facilities collecting the electronics.

Over the years, several e-recycling programs in Franklin County and the surrounding area have ended, leaving Washington Township as the only game in town when people are looking to recycle their electronics.

“We are the only place in the county taking TVs,” Geesaman says. “Adams County has a few places, but they only take them from their own residents. We have townships calling us and begging us to take their TVs.”

As a result, the township has more TVs than it knows what to do with, he says, and not all of them are taken to the facility for recycling. “We find them hidden under brush, hiding in the trash, lying in the woods, along mountain roads, and in orchards.”

At the end of its two-month moratorium, Washington Township was planning to once again implement a per-pound charge for dropping off old TVs and monitors and keep the recycling program open to non-residents. The last time it charged for taking electronics, he notes, the volume of recycled TVs was cut in half.

In the meantime, Geesaman would like to see the legislature fix the problems with the electronics recycling law.

“Why is it that other states can make this work but not Pennsylvania?” he asks.

Senate Bill 800 proposes to remedy the situation with a replacement law that would address some of the issues with the current legislation. Since it was introduced in June 2017, it has been sitting in the Senate Environmental Resources and Energy Committee. A hearing was held last October at which PSATS testified about the difficulties of finding willing recyclers and the increase in illegal dumping that has resulted.

Meanwhile, according to the Pennsylvania Recycling Markets Center, there are an estimated 5.1 million tube monitors and televisions — and counting — waiting to be recycled in Pennsylvania.



**A glut of e-waste has been a constant problem in Washington Township, Franklin County, in recent years. (Photo courtesy of the township.)**

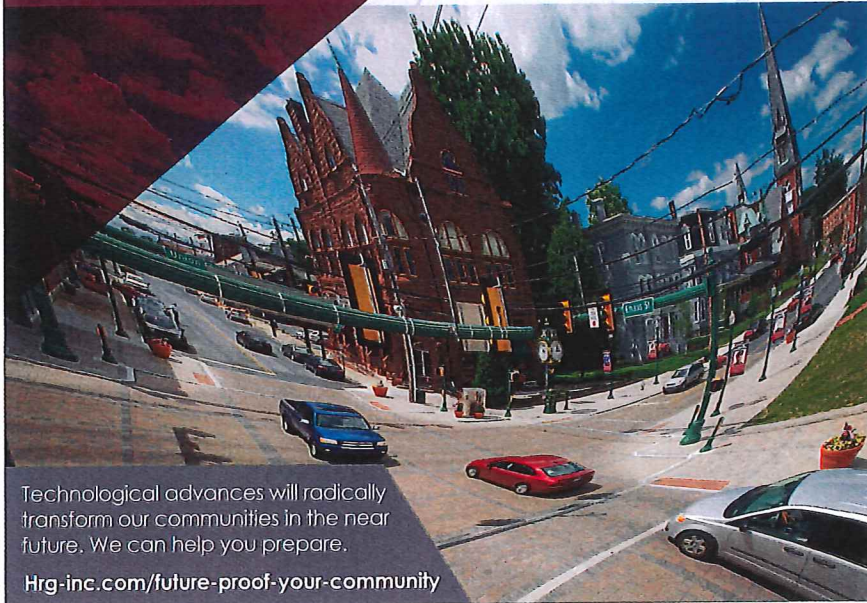


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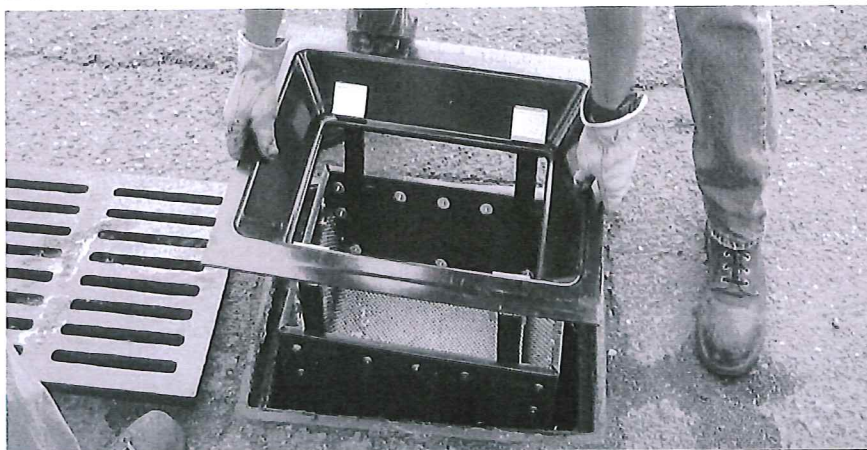
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markets, Sandoe says.

"Transportation to markets, depending on location, is not always cost-effective," she says.

When navigating the current marketplace, municipalities are advised to get to know their local processor and team up to ensure high recyclability of materials collected and processed.

"Know where your recyclables are being processed and understand how that facility's operation enhances or degrades the materials your residents are separating," McDonnell says.

Then, stay up to date on the latest in recycling and how to achieve high-quality materials for market.

"Continue to educate your residents," McDonnell says, "or even step up your education efforts, on the importance of recycling, the proper way to recycle, and the benefits your community — as well as our state, nation, and world — gain from recycling." ♦

## Recycling resources



- **Department of Environmental Protection** — Contact your DEP regional planning and recycling coordinator (follow the link at [www.dep.pa.gov/Business/Land/Waste/Recycling/Municipal-Resources](http://www.dep.pa.gov/Business/Land/Waste/Recycling/Municipal-Resources)). For help with contractual agreements with recyclers and processors, contact Todd Pejack, Bureau of Waste Management, at (717) 787-8685 or [tpejack@pa.gov](mailto:tpejack@pa.gov).

- **County recycling coordinators** — Seek advice from the recycling expert in your county. "That's what we're here for," says Jerry Zona, Lawrence County's recycling coordinator.

- **Earth911.com** — Visit this website to search, by zip code, for a list of locations that accept various recyclable materials.