

With recycling's dirty truths exposed, Washington works toward a cleaner, more sustainable system

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📷 1 of 30 | Pickers on the lines at Republic Services' Sodo facility pull out items that cannot be recycled. (Ellen M. Banner / The Seattle Times)



By [Sandi Doughton](#) 

Pacific NW magazine writer

IN 2017, ABOUT three-quarters of the stuff Seattleites dumped in their blue recycling bins — from grocery store ads and crumpled cracker boxes to shampoo bottles and yogurt tubs — was shipped to China. These days, virtually none of it is. The majority of the material is being recycled much closer to home — at facilities across North America and, increasingly, right here in the Pacific Northwest.

It's a transformation that would have once seemed unthinkable. For more than two decades, China eagerly sought out the world's paper and plastic waste and paid handsomely for it. Then, in 2018, the Asian nation slammed the door, fed up with shipments so filthy with garbage and debris, they couldn't be recycled and were a nightmare to dispose of.

The Backstory: [I've cleaned up my act — but the system needs to be cleaned up, too](#)

China called its new policy “National Sword,” and the [impact was immediate](#). Recycling programs across the United States suddenly found themselves with mountains of materials and no market. The West Coast was hit especially hard because of its reliance on cheap transport of recyclables via otherwise-empty shipping containers headed back to Chinese ports.

In the months after the policy took effect, thousands of tons of mixed paper from communities across King County [were landfilled](#). In Seattle, revenues from the sale of materials dropped from \$8 million in 2017 to \$4.7 million in 2018. Dozens of Washington cities, from Puyallup to Pullman, raised or added fees for recycling. Several stopped accepting materials like glass and some plastics, while the city of College Place, near Walla Walla, [scrapped](#) its whole program.

So why do some experts consider the upheaval the best thing to happen to American recycling in ages?

Partly because new, domestic markets for recyclables are emerging. Partly because the financial shock wave galvanized companies that collect and sort recyclables to upgrade their facilities. But also because communities and governments are finally being forced to confront some dirty truths about recycling and look for approaches that are cleaner and more accountable.

“We’ve been sloppy at all levels, and this has been a chance for us to really revamp our systems,” says Heather Trim, executive director of the advocacy group [Zero Waste Washington](#). “We see National Sword as a huge opportunity for Washington.”



Crushed glass called cullet drops off a conveyor belt onto the apex of a 15-foot-high pile at Strategic Materials in Seattle. The Sodo facility sorts, cleans and tumbles fragmented glass from... (Ellen M. Banner / The Seattle Times) [More](#) ✓

Washington’s Legislature responded to the crisis with a flurry of bills, including a statewide ban this year on the flimsy plastic grocery bags already banished from Seattle and other cities. A [comprehensive analysis](#) of plastic waste is due this fall. Proponents hope the results of that study will convince lawmakers to adopt radical changes in recycling, shifting the burden to the manufacturers that create so much packaging in the first place.

“There’s a real interest at the state and local level to get the manufacturers of the material to be responsible for that material ... and I think that’s a good thing to improve the health of recycling,” says Laurie Davies, Solid Waste Program manager for the Washington Department of Ecology.

Legislation that would have made Washington the first state to require a minimum level of [recycled content](#) in plastic beverage containers — topping out at 50% by 2030 — was vetoed by Gov. Jay Inslee as part of coronavirus-related budget cuts. But a [Recycling Development Center](#), created in 2019, continues to serve as a think tank to boost research and market development.

SEVERAL PULP MILLS across the region already have [switched](#) to using bales of mixed paper and cardboard instead of wood chips as their feedstock. That’s a new, local market for the largest component of residential recycling. When China was paying \$100 a ton for mixed paper, domestic recycling didn’t pencil out, says Jay Simmons, product development manager for the [NORPAC mill](#) in Longview. But now the price has plummeted, fluctuating between a few dollars a ton and negative values — which means the mill sometimes has to pay only for transporting the bales.

NORPAC is processing about 500 tons a day, turning the scraps into paper bags and liner board for boxes. They would like to expand to 440,000 tons a year — enough capacity to accept all the mixed paper from Washington, Oregon and Idaho.

“This is a great environmental story,” says Tom Rozwood, public affairs director for the company, which had temporarily closed part of the mill due to reduced demand for newsprint, its traditional mainstay. “It keeps this material out of landfills and puts 100-plus people back to work.”



A heavy-equipment operator picks up garbage ejected from the pulping vat at NORPAC in Longview. The garbage was mixed in with the paper and cardboard that are being recycled. Twenty truckloads of... (Ellen M. Banner / The Seattle Times) [More](#) ✓

But NORPAC is facing the same dirty truth about contamination that was so vexing to the Chinese.

In a cavernous building where bales are stacked before processing, Simmons and Rozwood point out flattened milk jugs, tattered plastic bags and chunks of Styrofoam mixed in with the paper. They've also found lengths of garden hose, twisted chairs and even a teddy bear. All that garbage has to be removed — and the first step occurs inside a pulping vat that resembles a giant, front-loader washing machine. The paper is turned into a slurry and the trash is screened out and ejected, then piled up for transport to a local landfill.



Bales of mixed paper and cardboard sit in a huge building at NORPAC in Longview before they are processed in a pulping vat and turned into paper, paper bags and liner board for boxes. Garbage is... (Ellen M. Banner / The Seattle Times) [More](#) ✓

Simmons estimates they send about 20 truckloads of gunk to the dump every day. Even worse are tiny fragments of glass that escape the screens. “It’s just a killer for us because it’s so highly abrasive,” Simmons says. The glass erodes valves and other parts of the complex papermaking machinery, requiring frequent replacements of components that cost \$800 to \$50,000.

If contamination levels can’t be brought down, it’s not clear whether the company’s plans to scale up will be economically feasible, Simmons says. “We’ve got to clean this stuff up.”

SOME OF THE bales shipped to NORPAC originate in Seattle’s Sodo neighborhood at the sprawling materials recovery facility operated by [Republic Services](#), one of the country’s biggest waste management firms. Workers sort through 800 tons a day of recycling from Seattle and other cities. The plant is a blur of continuous action, with a constant stream of trucks coming and going and a labyrinth of conveyor belts, some whizzing past at 600 feet a minute.

In 2017, the company got an average of \$149 a ton for the commodities it produces, says Pete Keller, vice president for recycling and sustainability. That number has been dropping ever since, with a 2020 forecast of \$66 a ton. Still, Republic has spent \$5.5 million to upgrade the Seattle plant since China’s ban — a survival tactic to reduce contamination and increase the marketability of its materials. “When the market changed, we couldn’t keep doing what we had been doing,” Keller says. “We had to make investments to improve quality.”



Eight hundred tons of recycling from Seattle and other cities arrive at Republic Services in Seattle every day. Aluminum cans are banded and will be shipped to smelters in North America to be... (Ellen M. Banner / The Seattle Times) [More](#) ✓

Among other improvements, they added new sorters that use near-infrared sensors and digital cameras to “pick” 1,000 bits of debris a minute, kicking out unwanted items with bursts of air. The goal is to parse the commingled materials into separate streams — paper, cardboard, PET plastics, HDPE plastics — but it remains an imperfect process.

With single-stream recycling, where everything goes into the same bin, it probably never will be possible to meet China’s strict new limit of 0.5% contamination for paper bales, Keller says. But the Seattle facility has been able to cut its rate roughly in half — to about 2% by weight.

Though Seattle and other cities recently banned plastic bags and films from recycle bins, the items continue to arrive in great profusion, clogging machinery and requiring frequent shutdowns. Dirty diapers are also common, as are clothing, lengths of chain, picture frames and table legs. Half-full mayonnaise jars, cans encrusted with dog food, greasy pizza boxes and bottles dribbling soda and spoiled milk can taint an entire truckload.

“I wish people understood there’s also a human impact to putting incorrect materials into their recycling bin,” says Kevin Kelly, manager of Recology’s Sodo sorting plant, which handles recycling from Bothell, Shoreline and other King County communities. “There’s a person who has to deal with those diapers, and hypodermics and engine blocks and plastic film.”

TWO SEGMENTS OF King County’s recycling economy weren’t fazed by China’s action, because they have long been processed locally: steel cans and glass.



Shane Wheeler, melt shop first helper, operates the electric arc furnace at Nucor in West Seattle. (Ellen M. Banner / The Seattle Times)

The [Nucor](#) steel mill, next to the West Seattle Bridge, buys scrap metal from across the Northwest, including refrigerator-size cubes of crushed cans from curbside recycling. The cans account for up to 5% of the scrap that’s melted in a 3,100-degree furnace and turned into rebar and other products, says Patrick Jablonski, the plant’s environmental manager. That adds up to about 100 million cans a year.

Glass can be more problematic to recycle than steel. It’s less valuable, it’s expensive to transport and it shatters in collection trucks. But Seattle is unusual in having two facilities in Sodo that recycle all the bottles and jars collected in the

city and King County. [Strategic Materials](#) cleans, sorts and tumbles the crushed glass, called cullet. [Ardagh Group](#), an international corporation, operates the adjacent plant, where 130,000 tons a year of cullet are melted and mixed with virgin materials to make up to 1 million wine bottles a day with 45% to 75% recycled content.

The operation's future is in question, though. King County, which owns part of the land, is considering [new tenants](#) when the existing lease expires next year. And the Ardagh plant, identified by journalists at [Investigate West](#) as the Puget Sound region's single biggest industrial emitter of soot, or fine particulate pollution, is also [being sued](#) by an environmental group over toxic discharges to the Duwamish River.



Marvin Diego, an individual section machine operator, works at Ardagh Group's Seattle facility. Ardagh Group operates a plant where 130 tons of cullet — recycled glass fragments — are melted each... (Ellen M. Banner / The Seattle Times) [More](#) ▾

Plant manager Ben Michaelson says the company intends to invest what it takes to fix the facility's environmental problems and emphasizes the service it provides. "If we weren't making bottles here, a lot of this glass would be going into a landfill," he says.

Like most recyclers, Ardagh also struggles with contamination. As bits of paper and plastic in the cullet are heated in the furnace, they release carbon, which can discolor glass. Ceramics, which have a different melting point than recyclable glass, create weak spots that can ruin a batch of bottles.

"A single coffee cup that shatters can make a thousand defects," Michaelson says. With cleaner cullet, the plant could boost the recycled content of its bottles, which would reduce energy use, he adds.

THE ECOLOGY DEPARTMENT is working with communities on a statewide plan to [cut down on contamination](#) in recyclables. One thing that would help is reducing confusion about what belongs in the bin by creating uniform standards, Davies says. That also could help focus efforts on materials with economic value, while eliminating marginal items, like certain plastics that might be recyclable in theory — but in reality are just contaminants.

"We made it just as easy to throw everything in the recycle bin as it was to throw everything in your garbage bin," Davies says. "The idea that recycling is free ... and that everything can be, and ultimately is, recycled needed to be reset. This is an opportunity to do that."



Communities across the state have launched campaigns, with slogans like “Empty, Clean and Dry,” to nudge residents into better habits and stop “wishful recycling” — tossing things in the bin with vague hopes they can be transformed into something useful.

But there’s a limit to what education can achieve in the absence of policies to create a robust environment for recycling, says Trim. “We don’t want to put the burden on the consumer. We would like to see the responsibility placed on the manufacturers.”

Advocates, environmentalists and utility officials are looking to British Columbia as a model for what they would like to see in Washington.

In 2014, the province adopted a system that puts the onus for recycling on companies that generate bottles, cans, boxes, plastic pouches, shrink wrap and all other types of consumer packaging and paper. Large manufacturers pay fees based on how much material they generate and how easy it is to recycle. “It shifts the cost away from municipalities and onto producers,” says Dave Lefebvre, public affairs director for [Recycle BC](#), which manages the program. The organization coordinates with communities to collect a “basket” of recyclable materials that’s the same from Vancouver to Prince George.

While U.S. cities cut back on recycling, B.C. has been expanding — even tapping a dedicated research fund to figure out how to recycle single-use [coffee pods](#). “We collect more types of materials than anyone else,” Lefebvre says. “Because we take all the material across the province, that allows us to increase the quality of our materials and to access markets.” The program incentivizes curbside collection that separates glass and plastic and paper to reduce cross-contamination. The price tag averages a fraction of a cent per unit recycled, so even if manufacturers pass the cost on to consumers, the impact is negligible, he adds.



A worker at Strategic Materials in Seattle plucks contaminants from a pile of sorted, processed glass fragments, called cullet. Strategic Materials cleans, sorts and tumbles crushed glass... (Ellen M. Banner / The Seattle Times) [More](#) ▾

While producer responsibility programs are common in Europe, no U.S. state has fully embraced the concept beyond niche programs for things like paint and batteries. Maine, [California](#), Indiana and New York are considering legislative proposals. When the first version of a bill was floated in Washington last year, it was opposed by business groups, toy and appliance manufacturers, and retail organizations — so there’s sure to be a fight when it comes up again next year, Trim says.

But the state is already benefiting — indirectly — from British Columbia’s system. When the producer responsibility program was implemented, a plastics recycling plant near Vancouver invested \$20 million to increase its capacity and sorting technology to capitalize on a guaranteed supply of material from across the province, Lefebvre says. As a result, that plant was able to help bail the Seattle area out of its recycling crisis by accepting much of the plastic that used to be shipped to China.

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