



DATE: January 11, 2018

TO: Programs & Administration Committee

FROM: Pat Cabrera, Administrative Services Director

BY: Justin Lehrer, Senior Program Manager

SUBJECT: Packaging Update

SUMMARY

Packaging plays an important role in product protection, but is often designed to serve this function for a very limited time before being discarded. With high visibility to consumers, packaging garners significant and sometimes negative attention when it comes to end-of-use handling and disposition, even when the package itself has fewer environmental impacts than the product it is protecting.

At the January 11 Planning & Administration Committee meeting, staff will provide an update to the committee on current Agency technical assistance and research activities relating to packaging, along with an overview and discussion of recent developments at CalRecycle, and more broadly across the packaging industry.

DISCUSSION

As a broad category of materials subject to constant innovation and change, and comprising roughly 25 percent of California's disposed waste, packaging is an important element of the waste stream for StopWaste to address. Packaging is one of three major topic areas that guide Agency policy and programs. While the mandatory recycling ordinance supports recovery of recyclable packaging materials at end-of-use (downstream), other packaging-related projects target packaging upstream, emphasizing prevention and reuse. Our work in the upstream area of packaging includes reusable transport packaging (e.g. pallets, totes, bins, pallet wrap, etc.), the reusable bag ordinance, food service ware, recyclability labeling for consumer packaging, and research and support for sustainable packaging policy.

In addition to the above project work, we actively follow developments within the broader sustainable packaging community through participation in industry groups and collaboration with other organizations. Staff will provide updates and insight on several topics of current interest in packaging, including package labeling for recyclability, ocean pollution, eCommerce packaging trends and opportunities, and more. We will also discuss CalRecycle's packaging policy development process, and how that is playing out at the State level.

RECOMMENDATION

This item is for information only.

Attachments: Four packaging-related articles



OPINION

Are the packaging wars coming to California?

By Charles White • Nov. 1, 2017

Editor's Note: This piece was written by Charles A. White, a senior advisor in the Sacramento office of Manatt, Phelps & Phillips, LLP. The opinions represented in this piece are independent of Waste Dive's views.

The state of California potentially is embarking on a mandatory comprehensive program to address packaging waste. This is in line with what some other national, regional and local governments are considering for their respective jurisdictions. The European Union, many Canadian provinces, China, India and the state of Connecticut — to name just a few — have adopted regulatory programs to manage and reduce packaging waste.

Retailers and manufacturers are also playing an important role by seeking to replace excessive packaging with more lightweight, less expensive and reusable packaging designs. Many manufacturers and retailers are working cooperatively — and voluntarily — with government and other stakeholders to minimize the impacts of packaging waste.

To build on voluntary industry efforts, the California Department of Resources Recycling and Recovery (CalRecycle) launched a "Manufacturers Challenge" in 2015. CalRecycle challenged product manufacturers and brand owners — on a collective basis, not on an individual company level — to voluntarily achieve a 50% reduction in packaging disposed in landfills in California by 2020. In CalRecycle's view, the packaging industry failed to organize and respond sufficiently to this challenge. CalRecycle currently views the voluntary efforts of the packaging industry as insufficient to reduce landfill disposal of packaging waste and to achieve California's stated recycling goals.

What's the problem?

The principal driver of CalRecycle's efforts to address packaging waste is legislation (AB 341, Chesbro) that established a statewide, mandatory commercial waste recycling program in 2011. Virtually all commercial enterprises generating more than 4 cubic yards of waste and recyclables per week will ultimately be required to recycle or use recycling services. In addition, this legislation also set a goal of achieving a statewide 75% waste diversion rate by 2020. CalRecycle is now using this stated goal as legislative direction to consider additional comprehensive mandatory regulatory programs to achieve 75% recycling. At present, CalRecycle does not have legislative authority to implement the additional comprehensive mandatory regulatory programs the organization believes may be needed to achieve this goal.

According to the report, the current system by which we produce, use and dispose of plastics has significant drawbacks: Plastic packaging material is typically used only once, resulting in lost value of \$80 billion to \$120 billion each year.

Although there is support from many environmental groups and local governments for further mandatory programs to reduce packaging waste, there is also growing concern about the nature and scope of such potential future measures. CalRecycle held a workshop on Oct. 10, 2017, in Sacramento, at which it was unable to clearly articulate an overarching need to protect the environment from packaging waste that would warrant additional comprehensive mandatory controls — a point that highlighted the complexities of implementing such a program.

From CalRecycle's perspective, AB 341 establishing the so-called goal of 75% recycling appears to be the principal driver. Further, at this workshop, CalRecycle acknowledged that the amount of

packaging waste in the overall disposal stream actually decreased from 9.5 million tons in 2008 to 8 million tons in 2014 — a decline of 17% over this six-year period. This is most likely due to increased efforts by the packaging industry to reduce the amount of packaging being used, as well as efforts by consumers, local government and recycling service providers to step up their efforts to recycle packaging waste. If these efforts are working, albeit at a modest pace, is there a need to pursue anything more?

Litter, stormwater and marine debris

Despite the efforts of manufacturers, retailers, consumers, local government and recycling service providers, excess packaging is often mismanaged by consumers — ending up as litter that degrades our environment and harms our waterways and oceans (see below). For example, a report released in 2016 by the World Economic Forum (WEF) details the extent of the plastics packaging problem worldwide. The report, "The New Plastics Economy: Rethinking the Future of Plastics," provides a vision of a global economy in which plastics never become waste and are continuously recycled. According to the report, the current system by which we produce, use and dispose of plastics has significant drawbacks: Plastic packaging material is typically used only once, resulting in lost value of \$80 billion to \$120 billion each year. Aside from the financial cost, the report asserts that remaining on the current track means that by 2050, oceans are expected to contain more plastics than fish by weight.

In a draft report expected to be finalized by early 2018, the State of California Ocean Protection Council, with the support of the California Natural Resources Agency, will likely make two priority policy recommendations for legislative action in the upcoming years — prohibiting single use products if a feasible, less damaging alternative is available and requiring the phaseout of single-use products, like convenience food and beverage packaging, from public institutions and facilities.

It is clear that the management of single-use materials (including packaging) that are easily discarded will be a subject of continuing rigorous debate in California in the upcoming months.

Also, in response to the concerns over packaging waste and other waste materials being dispersed into the environment, the California State Water Resources Control Board (SWRCB) and many of the nine Regional Water Quality Control Boards (RWQCBs) have adopted trash control policies. On April 7, 2015, the SWRCB adopted policies to limit the amount of trash discharged to the ocean waters of California (Ocean Plan) and to the state's inland surface waters, enclosed bays and estuaries (ISWEBE Plan). Together, these are collectively referred to as "the Trash Amendments."

Most local governments recognize that taking responsibility for reducing trash in waterways will be an extremely expensive undertaking, so they are looking at ways to shift some of this cost to other parties — such as the manufacturers, distributors, and retailers of trash and packaging materials that are discarded and discharged to waterways.

The objective of the Trash Amendments is to provide statewide consistency for the SWRCB's regulatory approach to protecting aquatic life and public health beneficial uses, and reducing environmental issues associated with trash in state waters, while focusing limited resources on high-trash-generating areas. Although trash is a broad, generic category of materials, packaging waste is a major part of the problem. The Trash Amendments essentially place an absolute prohibition on the discharge of trash to stormwaters of the state. The Trash Amendments also provide a framework for implementing their provisions that would be incorporated into the stormwater and waste discharge permits issued by the state and regional boards. The stormwater discharge permit categories include municipal systems, state highways, industrial sites and construction sites. Municipal permit holders must be in full compliance with the Trash Amendments within ten years of the first implementing

permit and 15 years after the effective date of the Trash Amendments.

California local governments are responding to the Trash Amendments in a variety of ways. Most local governments recognize that taking responsibility for reducing trash in waterways will be an extremely expensive undertaking, so they are looking at ways to shift some of this cost to other parties — such as the manufacturers, distributors, and retailers of trash and packaging materials that are discarded and discharged to waterways. Industry, on the other hand, is quick to point out that these discharges are the result of individuals improperly discarding these waste materials — and thus that businesses should not be held fully responsible.

Local governments are beginning to address this challenge. In one recent example, California legislation was enacted (AB 1180, Holden, 2017) that authorizes the Los Angeles County Flood Control District to levy a tax, fee, or charge to pay the expenses of carrying out projects and programs to reduce stormwater and urban runoff pollution in the district. The fee payers likely will include a mix of residents, retail stores and commercial enterprises. In fact, something like a previous, unsuccessful effort by Los Angeles County, which based a proposed fee on the amount of stormwater runoff from each parcel in the county, may emerge out of the new authority granted in AB 1180. This type of program could go a long way toward reducing the amount of trash pollution entering the waters of the state — but will it be enough?

Is packaging waste in a landfill really a problem?

Of course, there is also the concern about using landfills to manage packaging waste. The efforts of CalRecycle to consider comprehensive mandatory packaging regulatory strategies appear driven almost entirely by concerns over packaging waste disposal in landfills. CalRecycle is appropriately focusing on the landfill disposal of food waste, a significant source of landfill methane emissions.

Even if a landfill provides a safe repository for packaging waste, it makes little sense to fill up a landfill with packaging waste that has a worldwide estimated discarded value of \$80 billion to \$120 billion each year. However, given the choice of dispersing packaging waste into the environment, waterways and oceans, putting these materials in well-designed landfills would certainly seem to be a better option. Restrictions on landfill disposal of packaging waste could lead to increased disposal into the environment. But is there a better way?

Energy recovery is largely absent from California's version of the waste hierarchy. Only very limited energy recovery options are allowed for waste and waste residuals in California, due to concerns over toxic emissions resulting from the combustion of solid waste. The traditional waste hierarchy however, neglects an even lower level of waste management (or rather, mismanagement): uncontrolled dispersion into the environment. An example of this is when a waste material is discarded as litter and ultimately washed away by stormwater and discharged to the ocean. In recognition of this last, unspoken tier, land disposal and energy recovery (as a low-carbon fuel) should be seen as better alternatives.

One of California's cutting-edge environmental programs is the Low Carbon Fuel Standard (LCFS) managed by the California Air Resources Board (CARB). This program is fuel neutral, focusing entirely on the life cycle "carbon intensity" of various fuels. Studies have shown that converting solid waste (including packaging waste) to fuel can produce some of the lowest-carbon fuels. Recent work by the provincial government of British Columbia suggests that a substantially negative-carbon-intensity fuel can be produced from residual solid waste using conversion technologies.

Are there markets for California's recycled packaging waste?

Currently, California is highly dependent on other jurisdictions and countries to manufacture new products from its recycled waste materials, including packaging waste. Historically,

according to CalRecycle, most of what is collected in California's recycle bins is exported, with most going to China.

China has been in the news recently for its new import policies, which have virtually stopped all imports of packaging waste. Much of California's (and the rest of the world's) packaging waste shipments are being held up by such programs in China. California typically regulates recycled materials as being exempt from solid waste laws if they contain less than 10% contamination by weight. China's policy, however, now restricts imports of waste-derived materials that contain more than 0.3% contamination.

The challenge facing California and other jurisdictions that export recycled material is whether internal markets for the use of recycled materials can be developed. Most observers think this is possible, but it will not happen overnight — certainly not by 2020 — and will be very expensive.

What is CalRecycle up to now?

California enjoys a reputation of being a bellwether state with respect to a wide variety of programs and policies. The new CalRecycle packaging waste initiative is no different. CalRecycle is the lead California regulatory agency considering the need to develop comprehensive mandatory programs to directly regulate packaging waste.

According to CalRecycle, although (as pointed out above) the total amount of packaging waste disposed in California landfills decreased by 17% from 2008 to 2014, one-third of the 66 million tons of solid waste generated by Californians each year is packaging. Of the amount that is not recycled but is disposed of in landfills, approximately one-quarter of the 43 million tons of waste disposal in California is packaging waste.

In order to meet the statewide goal of 75% reduction of solid waste disposal by 2020, 24 million tons of solid waste will have to be reduced, recycled or composted. Assuming it would cost only an additional \$50 per ton to achieve this goal, the new

annual cost reaches over \$1 billion per year. Other estimates put this price tag much higher.

To identify priority packaging that is to be targeted by this initiative, CalRecycle is considering the following factors: Prevalence in the disposed waste stream, usage trends, current collection infrastructure, current processing infrastructure, greenhouse gas impacts of recycling, and waterway and marine debris.

Of the above factors, the only ones that can be directly linked to the protection of human health, public safety and the environment are the last two: marginal GHG impacts, if any, and waterway and marine debris.

Thus far, CalRecycle has identified several priority packaging materials for potential future regulatory action; these fall into two broad categories: fiber and plastic. One of the challenges facing CalRecycle will be determining the specific definitions used to target the potential priority packaging, including uncoated corrugated cardboard, waxed cardboard, film plastic, EPS and plastic drink pouches. All these packaging types are hard to specifically define and to differentiate from other nonpackaging applications.

The next stage in CalRecycle's process will be to identify and propose regulatory strategies that would be applied to these packaging material types. It is unlikely that CalRecycle would recommend only a single regulatory strategy, as all the materials involve different uses and characteristics.

Are there other policy models to consider?

Many observers are questioning CalRecycle's apparent focus on a limited range of models that utilize command-and-control strategies or direct market intervention mechanisms. One alternative concept would be to consider a sustainable materials management (SMM) policy — such as the one described by the USEPA, which is currently being pursued by the state of Oregon.

As described by the USEPA, SMM is a systemic approach to using and reusing materials more productively over their entire life cycle. It represents a change in how our society thinks about the use of natural resources and environmental protection. By examining how materials are used throughout their life cycle, an SMM approach seeks to:

- Use materials in the most productive way, with an emphasis on using less.
- Reduce toxic chemicals and environmental impacts throughout the material's life cycle.
- Assure we have sufficient resources to meet today's needs and those of the future.

Oregon's approach is oriented toward collaboration and developing partnerships with all stakeholders rather than sweeping command-and-control regulations. Oregon believes coordination throughout the life cycle of materials and products will support innovative solutions, through partnerships with other state agencies, businesses, local governments and nongovernmental organizations.

Where do we go from here?

CalRecycle is expected to finalize its recommendations for a packaging policy model in early 2018, at the beginning of the final year of California's current two-year legislative session. As previously noted, CalRecycle does not currently have the regulatory authority to implement many of the policy models it seems to be leaning toward. It is widely expected, however, that legislation will be introduced that authorizes CalRecycle to implement its packaging policy recommendations. The options facing the legislature are many, but the key options appear to be either implementing regulatory measures for each priority packaging type or reconsidering the need for further legislative and regulatory action. There are a few concerns that could drive that reconsideration, including the feasibility of a 75% recycling goal by 2020; the impacts of China's import policies; and whether further evaluation of the potential to produce low-carbon fuel from waste residuals is necessary.

Regardless of the eventual outcome, it is safe to say that the next few months are likely to see heated discussion of these issues. One can hope that common sense will prevail — and the "Packaging Wars" will be averted.

(<https://resource-recycling.com/plastics>)

PLASTICS RECYCLING UPDATE

A Resource Recycling, Inc. publication

PETG excluded from No. 1 resin code in California (<https://resource-recycling.com/plastics/2017/10/18/petg-excluded-no-1-resin-code-california/>)

Posted on October 18, 2017

by Colin Staub (<https://resource-recycling.com/plastics/author/colinstaub/>)

California lawmakers have revised the state's definition of PET to exclude PETG, meaning products made from the glycol-modified plastic are barred from using resin code No. 1.

[Assembly Bill 906](#)



(https://leginfo.ca.gov/faces/billTextClient.xhtml?bill_id=201720180AB906) moved through both houses of California's legislature last month and was signed by Gov. Jerry Brown on Oct. 15. The bill takes effect Oct. 1, 2018, giving manufacturers about a year to comply with its requirements.

Products made with PETG have different material properties than regular PET. According to [legislative analysis \(https://resource-recycling.com/resource-recycling/wp-content/uploads/2017/10/201720180AB906_Senate-Floor-Analyses-2.pdf\)](https://resource-recycling.com/resource-recycling/wp-content/uploads/2017/10/201720180AB906_Senate-Floor-Analyses-2.pdf) of the bill, PETG's additional glycol makes the resulting product less brittle and removes "hazing" that sometimes occurs when manufacturing with PET.

According to bill advocates, the legislation will increase bale quality and yields by increasing sorting of the materials.

"(PETG) will be more easily identified on a visual sort," Bruce Magnani, a lobbyist for the Association of Plastic Recyclers (APR), said during a [June hearing \(https://ca.digitaldemocracy.org/hearing/52890?startTime=1545&vid=7735eab4257286d9b342895954deb256\)](https://ca.digitaldemocracy.org/hearing/52890?startTime=1545&vid=7735eab4257286d9b342895954deb256) before the Senate Standing Committee on Environmental Quality. He added PETG did not exist when the resin codes were written.

But opponents said current technology exists to separate the materials. During the June hearing, opponents said the bill's primary impact would be a "substantial revenue transfer from the product manufacturers that use PETG to the recycling program in California," due to the higher processing fee that would be placed on the products if they're labeled No. 7. In California, containers are subject to fees paid to the state by beverage manufacturers, money that's then used to subsidize the recycling industry. Reclassifying PETG from No. 1 to No. 7 means its "processing fee" increases from \$0.00035 per container up to \$0.07058 per container, according to [data from the California Department of Resources Recycling and Recovery \(http://www.calrecycle.ca.gov/BEVCONTAINER/Notices/2016/ProcessFee.htm\)](http://www.calrecycle.ca.gov/BEVCONTAINER/Notices/2016/ProcessFee.htm) (CalRecycle).

The bill could also have impacts beyond California's borders, because PETG manufacturers sell their products into numerous states and may have to choose between making separate products labeled according to California's resin codes or streamlining all products to meet California's regulations.

"It will create a dual standard for the first time," said Joe Lang, a representative of Tennessee-headquartered Eastman Chemical Co., which makes PETG. He spoke during the June hearing as well.

Material differences

Some consumers reportedly find the material creates a product that's more comfortable to hold, according to the legislative analysis. PETG is also used in some medical equipment because it can handle heavy doses of radiation, according to APR.

But as PETG has gained prominence, the recycling industry has begun to widely realize that the material acts as a contaminant during the recycling process, Magnani said.

PETG has a much lower melting point than PET, according to the analysis, which creates problems during the recycling process. AB 906 redefines PET by its melting point and material composition.

"When processed together, PETG melts and becomes sticky while PETE remains solid," according to the analysis. "This results in PETG sticking to PETE chips, forming large clumps that cannot be processed."

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The latest plastics recycling news

New ag plastics recycling facility coming to California
(<https://resource-recycling.com/plastics/2017/12/06/new-ag-plastics-recycling-facility-coming-california/>)

More details have emerged about Revolution Plastics' plan to build an agricultural plastics recycling facility in the heart of California's San Joaquin Valley.

Value of recovered plastic packaging flat or down
(<https://resource-recycling.com/plastics/2017/12/06/value-recovered-plastic-packaging-flat/>)

Data from the sale of recyclable plastic bottles in early December suggest the value of recovered packaging will end the year in a slightly weak position.

In My Opinion: It's time for recycled-content mandates
(<https://resource-recycling.com/plastics/2017/12/06/opir-time-recycled-content-mandates/>)

Accelerating the transition to a circular economy has become a high priority for major companies and governments around the globe.

China envisions years of 'National Swords'
(<https://resource-recycling.com/plastics/2017/12/06/chir-envisions-years-national-swords/>)

Chinese officials have reiterated that some post-consumer plastics will be banned from import by the end of the month, and have elaborated on stringent future enforcement and regulatory plans. Even so, one exporter sees the potential for washed flake to ...

The legislation was also supported by the American Beverage Association, Californians Against Waste, Dart Container Corporation, the National Association for PET Container Resources, the Plastic Recycling Corporation of California, Talco Plastics, the Sustainable Packaging Coalition and Verdeco Recycling.

Sorting solutions exist

Opponents of the bill agreed PETG is an issue when it gets mixed in with the PET stream, but they pointed to current equipment that they said can effectively separate the materials. The problem, they said, is recycling companies that have chosen not to invest in that equipment. The Eastman Chemical Co. and the Plastics Industry Association opposed the bill.

"There already is existing technology to deal with the sorting issue that the supporters of the bill just talked about," Lang said. He said companies can make the fix by adjusting the sensitivity of the near-infrared sorter at the beginning of the process. Doing so allows the equipment to differentiate between PET and PETG, Lang said.

"It's a simple change to make. Recyclers in California have made that change," he said. "Some recyclers, however, have chosen not to invest in the new technology. As a result, if you, in fact, mix PET with PETG in the stream, the author is correct in pointing out that that can cause a gooey mess, even though it's less than 2 percent of the stream."

Lang said there have been efforts to petition the standards organization ASTM International, which writes standards for resin codes, to redefine the No. 1 code to exclude PETG, efforts ASTM have rejected.

"Now, what they are doing is asking the legislatures to step in and substitute their judgment for the science-based review that occurred at ASTM," Lang said.

Joe Ackler, testifying on behalf of the Plastics Industry Association, said the bill also increases costs for manufacturers because they will have to change their machinery and molds to produce a different resin code.

Magnani said PETG would likely be labeled as No. 7 initially, but that bill advocates are open to working with Eastman and the Plastics Industry Association to create a new resin code for PETG, so it can be more easily recycled in its own stream.

To receive the latest news and analysis about plastics recycling technologies, [sign up now](https://resource-recycling.com/e-subscribe/) (<https://resource-recycling.com/e-subscribe/>) for our free monthly Plastics Recycling Update: Technology Edition e-newsletter.

More stories about PET

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An update on China's import actions and a bankruptcy filing from one of the world's largest virgin PET producers drew readers' attention last month.

Federal tax reform will impact plastics recycling (<https://resource-recycling.com/plastics/2017/12/05/federal-tax-reform-will-impact-plastics-recycling/>)

Tax reform bills approved by the U.S. House and Senate include sweeping cuts to business taxes, and recycling industry associations are applauding the business-friendly measures.

Students pursue cheaper tool for identifying plastics (<https://resource-recycling.com/plastics/2017/12/01/students-pursue-cheaper-tool-identifying-plastics/>)

A team of college students in the U.K. is developing a low-cost instrument to allow manual sorters to quickly recognize different resins.

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FEATURE

GAIA report: RDF and other WTE tech is 'a false path to zero waste'

By **Cole Rosengren** • Sept. 7, 2017

A new report from the Global Alliance for Incinerator Alternatives (GAIA) and the Tishman Environment and Design Center at The New School calls out refuse-derived fuel and other co-incineration technologies for offering "a false path to zero waste" and undermining sustainability goals.

The report cites the EPA's Non-Hazardous Secondary Materials (NHSM) rule, which expanded definitions of solid waste and created new opportunities for "non-waste fuel products," as a key factor that has allowed companies to process material with less regulatory oversight than other methods.

The four case studies include the Hefty EnergyBag program, which the report says may not be screening for plastics that create harmful emissions when burned and is sending material to a cement kiln in Omaha, NE with a record of environmental violations. The Waste Management-backed SpecFUEL project in Philadelphia is also questioned for potentially selling material to the Northampton Generating Company's coal combustion plant, which has its own record of environmental issues. The RePower South project in Virginia, which hit a serious roadblock last month, and an alternative fuel project at the Lehigh Southwest Cement Plant in California are also highlighted.

To achieve "zero waste," the report recommends staying away from any of these technologies or other traditional WTE options. Careful procurement, advocacy for more recyclable packaging design and a decreased reliance on single-use products are

listed as important actions for cities or municipalities looking to improve their recycling efforts.

"We really believe there are businesses and cities that are trying to do the right thing and we want to make sure they have all the info they need to make an informed decision," Monica Wilson, research and policy coordinator for GAIA, told Waste Dive.

GAIA's stance on WTE combustion facilities around the world is well-known. At a time when political and financial factors make the construction of such facilities difficult in the U.S., more companies are turning toward alternative options. Various refuse-derived fuel plants or similar set-ups have existed in the U.S. for years and are now gaining new attention as technology improves.

According to a presentation from the consulting firm Gershman, Brickner & Bratton earlier this year, such projects have a "moderate to low" financial risk though commercial applications are still limited. The ones that are in development, often involving some method to capture certain categories of recyclables, are being watched closely by the industry as a sign of future potential.

"We really believe there are businesses and cities that are trying to do the right thing and we want to make sure they have all the info they need to make an informed decision."

Monica Wilson

Research and Policy Coordinator, GAIA

The GAIA report makes the case that the EPA's 2013 NHSM rule change has facilitated the expansion of these technologies by allowing companies to burn waste with fewer regulations than in traditional WTE combustion facilities once it has been converted to a fuel product such as pellets. GAIA describes this as a "loophole" that lets companies process material with less

oversight and potentially hazardous environmental consequences.

A spokesperson for the EPA declined to comment on the report prior to reviewing it. They referred to a fact sheet mentioning that the rule change was designed to address stakeholder concerns by increasing flexibility, while maintaining public health protections. It remains unclear whether the waste industry played a role in advocating for those changes at the time, or if the conversation was driven more by other sectors pursuing related changes to biomass regulations.

Waste companies have shown interest in some of these alternative options before. During a May interview with Waste Dive, Waste Management CEO Jim Fish mentioned SpecFUEL as one of the more "intriguing technologies" the company was exploring. GAIA told Waste Dive that they've heard mixed reports about how active this project still was and the level of Waste Management's involvement. Asked about the project's status, and what oversight is in place to screen facilities receiving the fuel, the company provided the following response.

"WM's SpecFUEL facility in Philadelphia, PA continues to operate and make fuel for customers," wrote Toni Beck, vice president of corporate communications and community relations, via email. "WM has partnered with Continuous Energy to facilitate the operation and optimization of the plant. WM is optimistic of SpecFUEL's prospects and we continue to maintain a pipeline of customers who are looking to use our product as a supplemental replacement to their existing fuels."

As for the EnergyBag program, the GAIA report portrays this as problematic not just because of emissions concerns about the Sugar Creek Cement facility in Omaha, but also because it encourages the use of non-recyclable plastics. Dow Chemical, in partnership with Keep America Beautiful, is currently offering grants for more municipalities to join the program. During a July interview with Jeff Wooster, the global sustainability director for Dow Packaging and Specialty Plastics, the program was described as a complement to existing curbside recycling options.

GAIA views this project as a way to avoid packaging redesign and slow efforts to move away from single-use or disposable products. Wilson described it as one of multiple industry "escape valves on the pressure around redesign" that doesn't address circular economy goals.

When asked about GAIA's claims of environmental problems with the EnergyBag program, Dow provided an extended response from Wooster. He wrote that using plastics in cement kilns "does not pose an increased risk to human health and the environment," noting that all operations are in compliance with Clean Air Act and other relevant regulations. Partner facilities, such as Sugar Creek, "undergo a strict vetting process" based on multiple factors including "environmental compliance and permits" and "analysis of the environmental impacts."

As for the argument that this program isn't sustainable, Wooster said that advancing the circular economy for plastics was an "important focus of our 2025 sustainability goals." Programs such as EnergyBag, he wrote, "could achieve positive long-term environmental and economic advantages and a solution for plastics that currently do not have strong recycling markets, including fewer tons of landfill trash, more energy resources and less dependence on fossil fuel energy."

Wilson and others focused on packaging changes still see this as a linear model because it doesn't result in material coming back into the system. They're concerned that such programs designed as interim solutions will allow companies to limit their responsibility for eventually making all packaging more recyclable. Full transparency about what comprises the remainder of the waste stream after recycling has been maximized and how that material can be addressed is viewed as a critical part of achieving "zero waste."

In many ways this debate goes to the heart of the "zero waste" challenge faced by businesses and municipalities. As currently designed, not all products in the marketplace have clear pathways toward recycling, composting, digestion or other diversion methods. This reality means that some form of disposal option is still needed, usually landfills or waste-to-energy

combustion. Because of this, cities have taken different stances on how they will achieve their own "zero waste" goals and whether energy recovery or other alternative methods fit into those definitions.

Alternative technologies offer an appealing way to sidestep some of the usual criticism around landfills and WTE combustion on the path toward hitting "zero waste" targets. Though if this report is any indication, environmental groups won't be subscribing to that logic.

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The Truth About Meal-Kit Freezer Packs

They're big. They're filled with goo. And they're rapidly accumulating in a landfill near you.

KIERA BUTLER JUN. 4, 2017 10:00 AM



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People love to complain about the wastefulness of meal-kit delivery companies like Blue Apron and Hello Fresh. The baggies that hold a single scallion! The thousands of miles of shipping! The endless cardboard boxes! Those problems

Apron has a take-back program, the company won't say whether it's actually reusing any of the freezer packs it's taking back—or just storing them in a warehouse.

about it. That's surprising, because it's actually the biggest (or heaviest, at least) thing in every meal-kit box: the freezer packs that keep the perishables fresh while they're being shipped. Blue Apron now sends out 8 million meals a month. If you figure that each box contains about three meals and two six-pound ice packs, that's a staggering 192,000 tons of freezer-pack waste every year from Blue Apron alone. To put that in perspective, that's the weight of nearly 100,000 cars or 2 million adult men. When I

shared those numbers with Jack Macy, a senior coordinator for the San Francisco Department of the Environment's Commercial Zero Waste program, he could scarcely believe it. "That is an incredible waste," he said. The only reason he suspects he hasn't heard about it yet from the city's trash haulers is that the freezer packs end up hidden in garbage bags.

Given that many meal-kit companies claim to want to help the planet (by helping customers reduce food waste and buying products from environmentally responsible suppliers, for example), you'd think they would have come up with a plan for getting rid of this ever-growing glacier of freezer packs. Au contraire. Many blithely suggest that customers store old gel packs in their freezers for future use. Unless you happen to have your own meat locker, that's wildly impractical. I tried it, and in less than a month the packs—which are roughly the size of a photo album—had crowded practically everything else out of my freezer. Two personal organizers that I talked to reported that several clients had asked for a consult on what to do with all their accumulated freezer packs.

As Nathanael Johnson at *Grist* points out, Blue Apron has also suggested that customers donate used freezer packs to the Boy Scouts or other organizations. I asked my local Boy Scouts council whether they wanted my old meal-kit freezer packs. "What would we do with all those ice packs?" wondered the puzzled council executive. (Which is saying a lot for an organization whose motto is "be prepared.")

The meal-kit companies' online guides to recycling packaging are not especially helpful. (Blue Apron's is visible only to its customers.) Most of them instruct customers to thaw the freezer packs, cut open the plastic exterior, which is recyclable in some places, and then dump the thawed goo into the garbage. (Hello Fresh suggests flushing the goo down the toilet, which, experts told me, is a terrible idea because it can cause major clogs in your plumbing.) The problem with this advice is that it does not belong in a recycling guide—throwing 12 pounds of mystery goo into the garbage or toilet is not recycling.

To its credit, Blue Apron is the only major meal-kit service to offer a take-back program: Enterprising customers can mail freezer packs back to the company free of charge. But Blue Apron spokeswoman Allie Evarts refused to tell me how many of its customers actually do this. When I asked what the company does with all those used freezer packs, Evarts only told me, "We retain them for future use." So does that mean Blue Apron is actually reusing the packs in its meal kits, or is there an ever-growing mountain of them languishing in a big warehouse somewhere? Evarts wouldn't say.

Now back to that mystery goo, which, in case you're curious, is whitish clear, with the consistency of applesauce. Its active ingredient is a substance called sodium polyacrylate, a powder that can absorb 300 times its weight in water. It's used in all kinds of products, from detergent to fertilizer to surgical sponges. One of its most common uses is in disposable diapers—it's what soaks up the pee and keeps babies' butts dry. When saturated with water and frozen, sodium polyacrylate thaws much more slowly than water—meaning it can stay cold for days at a time.

Meal-kit companies assure their customers that the freezer-pack goo is nontoxic. That's true. But while sodium polyacrylate poses little to no danger to meal-kit customers, it's a different story for the people who manufacture the substance. (Meal-kit companies

*stuff inside freezer packs is
'e from the same stuff as fossil
, and it doesn't biodegrade.*

typically contract with freezer-pack manufacturers rather than making their own.) In its powdered state, it can get into workers' lungs, where it can cause serious problems. The Centers for Disease Control and Prevention noted in 2011 that workers in a sodium polyacrylate plant in India developed severe lung disease

after inhaling the powder. Animal studies have shown that exposure to high concentrations of sodium polyacrylate can harm the lungs. Because of these known risks, some European countries have set limits on workers' exposure to sodium polyacrylate. Here in the United States, some industry groups and manufacturers recommend such limits as well as safety precautions for workers like ventilation, respirators, and thick gloves. But on the federal level, neither the Occupational Safety and Health Administration nor the National Institute for Occupational Safety and Health have any rules at all. (The companies that supply freezer packs to Blue Apron and Hello Fresh did not return repeated requests for information on their manufacturing processes.)

Beyond the factory, sodium polyacrylate can also do a number on the environment. In part, that's because it's made from the same stuff as fossil fuels—meaning that making it produces significant greenhouse gas emissions, a team of Swedish researchers found in 2015 (PDF). It also doesn't biodegrade, so those mountains of freezer packs sitting in the garbage aren't going anywhere anytime soon.

So to review: Freezer packs create an epic mountain of garbage, and their goo is not as environmentally benign as meal-kit companies would have you believe. So what's to be done? One place to start might be a greener freezer pack. That same team of Swedish researchers also developed a sodium polyacrylate alternative using biodegradable plant materials instead of fossil fuels. A simpler idea: Companies could operate like milkmen used to, dropping off the new stuff and picking up the old packaging—including freezer packs—for reuse in one fell swoop.

A little creative thinking might go a long way—yet none of the companies that I talked to said they had any specific plans to change the freezer-pack system (though Hello Fresh did say it planned to reduce its freezer pack size from six pounds to five pounds). And when you think about it, why should they fix the problem? Heidi Sanborn, head of the recycling advocacy group California Product Stewardship Council, points out that the current arrangement suits the meal-kit providers just fine. "It's taxpayers that are paying for these old freezer packs to sit in the landfill forever," she says. "Companies are getting a total freebie."

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