

D I A L O G U E

SHOULD WE BAN SINGLE-USE PLASTICS?

SUMMARY

Millions of tons of plastic enter the environment every year, killing wildlife, releasing toxins, clogging drains, and marring landscapes. Bans or restrictions on single-use plastics have exploded in popularity in recent years as a means of addressing these problems. Yet these bans remain controversial, with some businesses pushing back against what they consider excessive regulation and others maintaining that banning single-use plastics uses political capital that could be spent advancing more urgent and systemic agendas. On October 16, 2019, the Environmental Law Institute hosted an expert panel that explored the benefits and challenges of an increasingly popular, but contentious, approach to the problem of plastic pollution. Below, we present a transcript of the discussion, which has been edited for style, clarity, and space considerations.

Caitlin McCarthy is ELI's Director of Education, Associates and Corporate Partnerships.

Lillian Power (moderator) is an Environmental Protection Specialist with the District of Columbia Department of Energy and Environment.

Catherine Plume is a Principal with BlueGreen Plume, LLC.

Matt Seaholm is Executive Director of the American Progressive Bag Alliance.

Jean-Cyril Walker is a Partner with Keller and Heckman LLP.

Caitlin McCarthy: Welcome to *Should We Ban Single-Use Plastics?* I would like to briefly introduce today's moderator. Lillian Power is an environmental protection specialist with the Watershed Protection Division at the District of Columbia's Department of Energy and Environment. She leads the team responsible for implementation and enforcement of the District's regulation on single-use plastics, including the five-cent bag fee, foam ban, and recent single-use plastic straw and stirrer ban. She has over 10 years' experience in environmental research, education, and policy, with a focus on the District and the Anacostia Watershed.

Lillian Power: I have the pleasure of introducing our panelists here today. J.C. Walker is a partner at Keller and Heckman LLP. He advises clients on safety and risk management issues affecting a broad range of consumer industrial products from the design phase to end-of-life. This includes assisting companies with environmental claims and underlying substantiation for products throughout the plastic supply chain.

Matt Seaholm is executive director at the American Progressive Bag Alliance for the Plastics Industry Association.

He manages an independent trade association of companies concerned about regulation of plastics and interested in promoting the value of plastic film and bag manufacturing and recycling. Matt has previously been vice president of public affairs for a public relations group, a campaign manager and political director, and more.

Catherine Plume is a lifelong environmentalist. As the principal of BlueGreen Plume, LLC, Cathy has designed and implemented and evaluated natural resources, climate change adaptation, and waste reduction projects for more than 25 years. While at World Wildlife Fund, The Nature Conservancy, World Resources Institute, and CARE, Cathy worked with companies and governments to create and improve sustainable supply chains for a variety of commodities.

Before I hand it off to them, I would like to share a little bit about my experience and my work here in D.C. As Caitlin mentioned, I am responsible for implementing and enforcing several policies here in the District aimed at regulating and managing single-use plastics. I work for the Department of Energy and Environment (DOEE), which is our local environmental agency here in D.C.

Primarily, what I want to talk about are three policies we have here in the District starting with the five-cent bag fee, which is over 10 years old. We also have a ban on expanded polystyrene food service ware, also known as foam. We have a very recent ban on single-use plastic straws and stirrers. I want to give you some background on our rules, as well as the successes and impacts that we've had as a result of implementing these rules in D.C.

To give a bit of background on the motivating factors for these laws, they were very locally motivated. We have two rivers here in the District: the Potomac River, which is much more nationally known, and a much smaller river called the Anacostia River that flows into the Potomac and

the Chesapeake Bay. The Anacostia River has a history of pollution issues, including particularly trash and plastics.

In 2008, DOEE funded a study to better understand and assess the issues with trash in the Anacostia River. What we found was that there were four primary types of trash in the river and its tributaries—plastic bags, foam, food wrappers, and bottles and cans. Understanding this data right where our problem items were helped us formulate what our plan of action would be in helping to address these trash issues in the Anacostia.

Also, fresh off the press, this month, the Chesapeake Bay Program's Scientific and Technical Advisory Committee (STAC) concluded that microplastics pose a real potentially serious risk to restoration of the bay and its watershed. So, while a lot of these policies here in the District were motivated by Anacostia issues, we're starting to understand how long-lasting these plastic issues are beyond the Anacostia as microplastics in the Chesapeake Bay and our oceans.

Starting with our oldest policy, the five-cent bag fee was actually the first of its kind in the nation. It requires any business selling food or liquor in the District to charge \$0.05 for every disposable paper or plastic bag that they issue to a customer. Not only did the law require this charge, but it also set up a special-purpose fund called the Anacostia River Clean Up and Protection Fund. Businesses need to remit part of that fee into this fund, which is used solely for projects and programs in the District that are aimed at restoring and protecting District waterways with a special emphasis on the Anacostia Watershed.

After nine years of being in place, so far, we've generated over \$19 million in revenue in this fund, which has allowed us to achieve several really positive things for our waterways. We have removed over 70,000 pounds of trash by installing trash traps along tributaries along the Anacostia. We've restored over 29,000 feet of streams. We've planted over 3,000 trees and installed over 2,000 rain barrels. We've also engaged thousands of students and residents in education projects and programs to help them understand the importance of our local waterways and watersheds.

I have a few metrics that I want to share for impacts of this law, one being our compliance rates. We do actively go out and inspect. We see a steady, consistent increase in our compliance rates from one year to the next. Last year was our highest ever at 77% compliance. We really see this as a measure of how the businesses and residents in the District are responding to the law. They're adjusting and complying with the law in a way that we hoped that they would.

Regarding the question of whether it is having the intended impact of reducing the amount of plastic bags we're actually finding in the river, the figure below is a graph we like to share. This is data shared with us by the Alice Ferguson Foundation, which is a local nonprofit. They do annual watershed cleanup events. What they've seen is a steady decrease in the number of plastic bags at their clean-

ups since 2010 when the law first went into effect. So, we see this as an example of this law having the intended effect of impacting behavior change. People are getting used to transitioning from plastic bags to reusable bags or no bag at all. But it is also having the effect of reducing the number of plastic bags we're finding in our waterways.

Next up is our Styrofoam ban, which went into effect January 1, 2016. This ban requires any business or organization selling or serving food or beverages in the District to no longer use foam to serve their customers. Again, similar to the bag law, we see an increase in overall compliance over the past few years. We have a compliance rate of 97% at this point. So, businesses and residents are very much adjusting to this rule and this requirement.

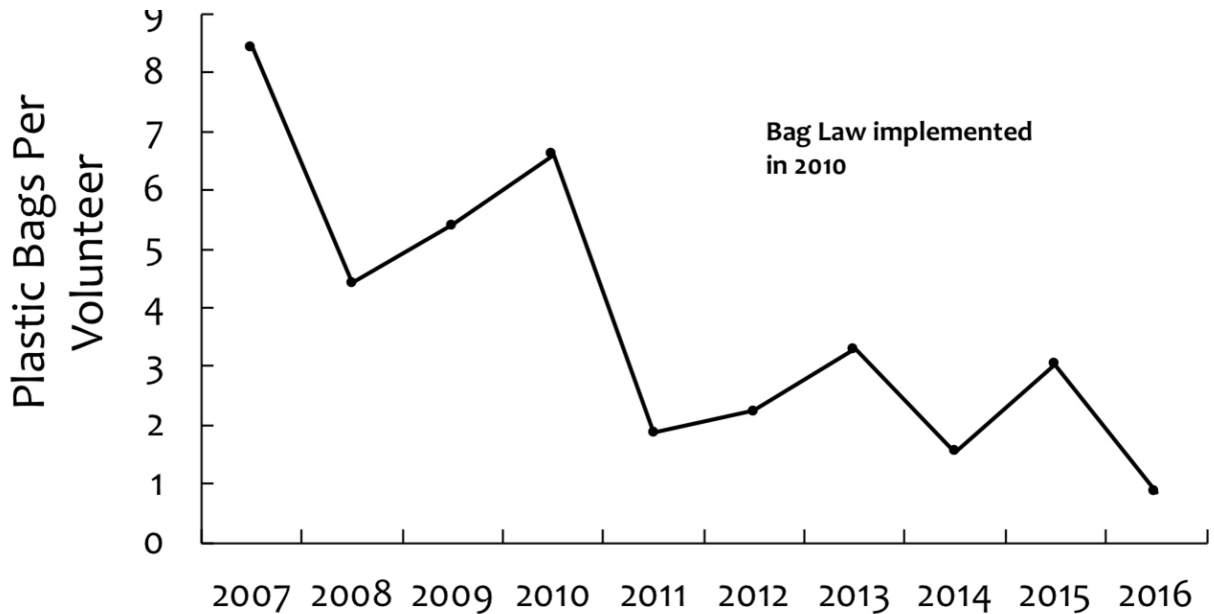
We have some data from local trash traps, which are sort of like floating Bandalongs that literally catch trash as it flows downstream before it hits the main water column of the river. The Anacostia Watershed Society looks at and breaks down trash trap data, like the types of trash found in the trap. Once the D.C. ban and Montgomery and Prince George's Counties bans went into effect, we saw a decrease in the amount of foam in the trash traps. We again see the law really providing this intended effect of protecting our waterways from these primary issues of these problem items.

Finally, I want to touch on our most recent ban on single-use plastic straws and stirrers that has been in effect technically since October 2018, but we started inspecting and enforcing in January 2019. I've broken down some compliance rates before and after July. That's because in July we started issuing fines. So, that was, for many businesses, the real deadline. We see compliance rates going from 59% to over 83% in less than one year's time.

The District is unique in that we have a history of these regulations. I think businesses and the community as a whole are used to understanding that this is a real priority for the District. They have done a really great job of responding well to these policies.

Jean-Cyril Walker: I will address the question, at least at the macro level, of whether we should ban single-use plastics. Lillian's presentation actually illustrates some of the points that I want to make with regards to at least the term "single-use plastics." Just a quick disclaimer—since I am a lawyer, it would be inconceivable without having one: any discussion that I may provide here with regards to a law is merely for instructional purposes and is not meant to convey legal advice.

In case you were wondering where I stand on single-use plastic bans, I want to make it clear that I'm opposed to them. But I want to nuance my position a little bit. I'm not necessarily opposed to specific bans. I'm opposed to the concept of a single-use plastic as that term is actually being used in the law and sort of broadly in the context of the discussion.

Figure 1. The Anacostia Clean Up & Protection Act (“Bag Law”), Evidence of Progress

Source: Data courtesy of Alice Ferguson Foundation, 2017.

I think the term “single-use plastic” is a misnomer for what is actually occurring both at the legislative and regulatory levels and also from a public policy standpoint. A discussion in the context of bans of single-use will not address the underlying cause of the problems that we have, not only with plastic waste, but waste in general, which is behavior. Right? So, in that context, I think that Lillian’s presentation certainly dovetails into my view, that what we do need to get at is behavior. Not just company behavior, but consumer and product user behavior, which a lot of the discussion seems to gloss over in sort of a demonizing and reflexive way without looking at underlying cause.

What is a single-use plastic? Well if we look at some of the language in legislation from the standpoint of the clients that I represent, it makes it very difficult for them to identify if you look just generally at the broad definition of what a single-use plastic is. According to Vermont, for example, it’s a product that’s generally recognized by the public as being an item to be discarded after one use.¹ The problem I have with that particular definition is that there is no sort of general definition of what that means. It’s basically left to a public interpretation.

There’s also not a definition of “use.” The reason this becomes important, and this is something that I’m going to reiterate, is because I think we all know what they’re trying to get at. Which is why I think, again, Lillian’s pre-

sentation is very instructive because D.C. targeted specific items for either bans or taxes. Indeed, when you go through all of the legislation, what you will find is that while there is a very broad amorphous definition for single-use plastic, what they really mean is specific items that they’ve identified for a particular reason.

For example, Vermont targets bags, stirrers, and straws. In contrast, the European Union (EU) has nine items that it targets in varying degrees.² Some of them are just bans, some of them are labeling requirements, whereas others are simply reduction requirements.

So, the whole notion of a single-use plastic ban to my mind is simplistic, and doesn’t really address some of the fundamental issues. I think there’s some other problems with some of these definitions. The EU definition is very broad and, in my view, would cover any plastic product, whether it is a single-use product or not.³ The only way you know that it’s limited is because they have an annex that lists the items that they want to address.

Again, what is a single use? What does that mean? Does that mean, if you look at the EU definition, it requires a

1. VT. STAT. ANN. tit. 10, §6691: “Single-use product” or “Single use” means a product that is generally recognized by the public as an item to be discarded after one use.

2. Directive 2019/904, arts. 4-8, annex A, of the European Parliament and of the Council of 5 June 2019 on the Reduction of the Impact of Certain Plastic Products on the Environment, 2019 O.J. (L 155).

3. *Id.* art. 3(2): “Single-use plastic product” means a product that is made wholly or partly from plastic and that is not conceived, designed or placed on the market to accomplish, within its life span, multiple trips or rotations by being returned to a producer for refill or re-used for the same purpose for which it was conceived.

product to go back and either be refilled or reused? Well, that would get rid of any bushing in a car that's made out of plastic because that would never be refilled or reused if we take the language literally. Certainly, in the context of disposal, it would apply to any medical device that's made out of plastic. The point I want to make here is that, when we're talking about single-use plastic, we are actually talking about a very narrow subset of plastic products with some very narrow use profiles. I think we do a broader disservice in talking about it amorphously.

In looking at single-use plastic bans, again, as I alluded to it, there are a host of products that would be covered under this single-use plastic definition, including blood bags, syringes, gloves, and a variety of other products that we never discuss in the context of these bans or restrictions. From my standpoint, I would prefer to use the actual items that are being talked about as opposed to just this broad definition.

I think it's interesting that, depending on the nature of the product, a ban is not necessarily what is required. I think the EU example is interesting. Certainly, they've identified certain products that we don't even consider here such as Q-tip handles and oxo-degradable plastics. It's interesting to know that the United Nations Environment Programme has actually identified cigarette filters as the problem and the largest component found in some of these waste streams.⁴ Yet none of these bans ever discussed the issue. I would submit that that is a behavioral issue that the legislature is not ready to tackle.

In the same way—and I don't mean to be facetious here—disposable diapers would fall under the category in any of these laws. They are either explicitly excluded under these laws or they are implicitly excluded. So, from my standpoint, I want to caution against the use of the term broadly without some further elucidation because there is potential for mischief.

I work with a lot of companies throughout the plastic supply chain, including resin manufacturers, packing manufacturers, and product manufacturers. Obviously, we react reflexively to the notion of bans in a lot of ways, but I think it's worth asking whether a ban will have a significant effect at least from a global standpoint. I take the point with regard to local issues as to whether or not a targeted ban or a targeted restriction will address the issue.

But I think, from a global standpoint, getting rid of plastics does not solve the issue because the substitution can sometimes be as bad or worse. The way I approach this is to think that plastics were a technological response to a need or to a technical issue. Going back to other approaches,

while they may work at a micro level, they may not work at a macro level.

I will let Matt discuss plastic bags in general, but I want to talk about one of the reasons that plastic bags—and I don't want to steal your thunder, Matt, but it's just a really great example—as compared to paper bags, from a total life-cycle standpoint, typically perform more favorably. The reason is mostly because of the transportation context. You can transport more plastic bags per trip than you can paper bags, so you have more bags. From that standpoint, you have fewer emissions because of the number of trips. You have fewer greenhouse gases. So, there's a broader discussion about the replacement or alternatives that may work from a jurisdictional standpoint, but that may not work globally.

Also, sometimes I think what happens is that we think about the ban before we think about the solution. In a certain context, going from, say, plastic bottles to glass bottles isn't going to be the solution because if you look at recycling rates for glass, they're lower than they are for plastics right now because of some technological issues with regard to contaminants in glass. So, when we talk about bans, and I understand again that there may be local impetus for implementing these bans, it's important to understand that a solution may not actually solve the problem. It may exacerbate the problem.

What are my clients talking about? They're very concerned about these issues. They are listening not only to the end-use customers, but also the direct customers in the supply chain, the brand owners who would want to position themselves on the right side of this issue. No one is talking about changes in user behavior at the consumer point because obviously you wouldn't sell the product, right?

Some of the things that my clients are looking at, depending on the type of product, are partnerships with the brand owner and the retailer to increase closed-loop recycling. Several of my clients will be announcing in the next few months commitments to, at least by I think 2023, basically recycling 100% of their products. What they're going to do in some cases is commit with the retailers at the point of sale to provide consumers with mail-back capabilities to return the product so that they can reuse it in their processes.

There are a couple reasons. One, they believe in the value proposition of their technology. There are certain things that are better. It's not diaper manufacturers, but I will use it as an example. There's a reason why paper or plastic diapers have surpassed cloth diapers. If you believe in that technology and you believe in that solution but you want to be on top of the impact, you need to do something about that. So, I think there are a lot of reasons why we wouldn't recycle diapers. But to me, the value proposition of the product is clearly indicated for this product as it is in some other plastic article.

4. UNITED NATIONS ENVIRONMENT PROGRAMME, SINGLE USE PLASTICS: A ROADMAP FOR SUSTAINABILITY 10, https://wedocs.unep.org/bitstream/handle/20.500.11822/25496/singleUsePlastic_sustainability.pdf?isAllowed=y&sequence=1 (citing INTERNATIONAL COASTAL CLEANUP 2017 REPORT (Ocean Conservancy 2017), https://oceanconservancy.org/wp-content/uploads/2017/06/International-Coastal-Cleanup_2017-Report.pdf).

The other issue that the plastics industry is grappling with is increased investment in mechanical recycling. The Chinese ban on import of recyclable materials has significantly impacted recycling in this country. The problem is that at this particular juncture, there is no economic benefit to recycling a significant number of plastics.

At the same time, what the industry is looking at is the fact that there are mandatory requirements, particularly coming out of Europe, that are going to create a significant demand for recycled material within the next five years. So, what is going on right now within the industry is increased discussions here in the United States as well as in Europe to increase the availability of the recycling structure and look at the economic benefits from that.

Other technological developments that my clients are working on are chemical or molecular recycling technology for plastics. What this means is that this would take any plastic down to, in essence, the carbon molecule for reuse in the process. They've been looking at this for quite a long time and there's a significant lead time in development, but I'm aware of at least two plant tests of the technology that will be going into effect this year. The hope is that at some point we will no longer be concerned about the contamination or incompatibility issues for mechanical recycling because they would be taking the plastics back down to the molecule.

Something that we hardly ever talk about, and I think the Europeans are much further ahead of us, is the end-of-life design at the development stage of a product. There are certain reasons from a packaging standpoint why certain types of hard plastic components are still used—security and protection during shipping. If you think about the supply chain for certain types of products, products can be in transit for a very long time, and certain types of materials don't offer the same benefits as plastics. You could use steel or wood, but then there are trade offs in terms of size, transport costs, and so on.

In the context of manufacturing wood and steel products, there are significant environmental impacts. Plastic manufacturing is a relatively clean process with relatively abundant raw materials. So, from a cost-performance standpoint, it makes sense. Paper is also an option. What we're seeing in the marketplace, depending on the nature of the product, is that manufacturers are making very logical choices.

For most electronic companies, packaging has changed completely to cardboard. It makes sense given the nature of the product. And if you look at the types of closures, I think for the most part they've handled the security aspects. So, they don't need blister packs because they're using radio-frequency identification. But I think with some other products, plastic remains the best option. To the extent that we have that, what my clients want to do is to be part of the solution rather than the problem.

Matt Seaholm: I'm the executive director of the American Progressive Bag Alliance. We are a group of bag manufacturers that banded together originally because the competition from overseas didn't care about the end-of-life of the products. We were seeing that as a direct contributor to the idea that we need to ban the products that we manufacture here in the United States. That led a number of our members to invest significantly in the idea of a closed-loop recycling system, the Bag-2-Bag program that you will see at stores. The "drop-off at store" logo was created by our members because we believe that there should be an alternative end-of-life as long as it wasn't being taken at the curbside.

Like I said, we're American companies. We're based here. We manufacture our products here. We also employ tens of thousands of Americans in the manufacture of plastic retail bags amongst other things. And as an association, we work on these issues across the country.

As I mentioned, the store take-back programs are possible because plastic bags are 100% recyclable. We recycle them. There are a variety of different ways in which to recycle them, but they're also highly reused. We'll get into that as well.

A number of times, when we see ordinances passed, especially at the local level, the idea that the vast majority of bags are being made out of oil is one of the contributing reasons why we should ban them. It's important to note that plastic bags come from byproducts of the natural gas refining process. Anything made pretty much across the plastic stream in North America is coming from a byproduct of natural gas. In many cases, the product that's coming out would probably be flared off if it wasn't being put into something else like plastic bags.

Another important point is that every life-cycle assessment that's ever been done, that's not coming from the industry. That's from a governmental unit. They have shown that plastic retail bags, as long as they're disposed of properly, are the best option at the checkout counter even at one use, but certainly after one reuse.

The vast majority of plastic retail bags, the traditional thin-gauge ones that you think about, are manufactured here in the United States. Those collected for recycling are recycled here in the United States or Canada. I raise that point just because J.C. talked about the impacts of the Chinese policy. That really shut the door for any export of plastic products.

To answer the question, do plastic bag bans work?, I'm going to focus almost entirely on bags because that's what I represent first and foremost. Some of this works for other products. I think one of the first things we always look at is, if you ban a product, it's going to go away. If you tax it, you're going to have less of it. So, if your municipality or state has implemented any type of a bag ban or tax, you're going to see a reduction in net product.

Does that mean that it's necessarily the right thing to do? We'll get into that. The primary point that we'd like

to make is that they have unintended consequences. I don't think anybody would disagree that where these policies are coming from is well-intentioned. I mean, we're trying to reduce litter. We're trying to reduce waste. Those are goals everybody can share. But whether or not a ban is the right approach, I think we would argue that it's not. One of the reasons is that the alternatives aren't necessarily better for the environment.

The last point I want to make is that the unsustainable use of any of our products is something that we try to fight against. If we don't have a sustainable product, we don't have a sustainable business. That's why we invest in recycling. That's why we push reuse. That's why we work with retailers in order to reduce the number of bags that are going out of the store, like reducing double bagging. We make the argument that if you don't need one, don't take one. We don't want to see that single bag going out for one item from your corner CVS or Walgreens, or anything that might be in this neighborhood. I think we can all agree that unsustainable use of the product is not something we would ever argue for.

Going into the rationale for banning plastic bags. I go across the country and listen to the arguments as to why we need to do this. A lot of times, I hear "we need to do something." But the rationale for pushing legislation at both the local and state levels is really focused on a few things, one of which is that bags are filling up our landfills.

The latest U.S. Environmental Protection Agency (EPA) data records what percentage of plastic bags and sacks makes up the municipal solid waste stream in the United States.⁵ All bags and sacks make up 0.3%. This percentage is actually a few years removed because this is the last number that they have. This line item actually goes to zero after this. But for the purposes of discussion, we'll say 0.3% of all plastic bags and sacks. Plastic retail bags make up a part of that, but a very small part of it. That's why, traditionally, in waste categorization studies, plastic retail bags don't show up as a significant portion of the waste stream. So, they're only a fraction of that number.

We also hear that plastic bags are everywhere. I get it. You see one up in a tree. It's incredibly visible. Their lightweight characteristic certainly makes it easy for wind to blow them around. That results in "I see them," therefore, "they're everywhere." The latest scientific study that was done, at least that we have access to, was conducted by the Clean Communities Council in New Jersey and funded by the state's Department of Environmental Protection.⁶ They found that branded plastic retail bags make up 0.8% of litter statewide in New Jersey. In a study conducted last year,

they found 0.8% is what a grocery sack that you'd get from anywhere, from a Walmart Wawa, makes up when you're talking about litter. So, in most cases, you're seeing numbers that are less than 1%. There are certainly litter studies that have shown slightly over 1%, but 1% is a reasonable number to come to as a consensus.

Then, we hear a lot about marine debris. There's always going to be a discussion, especially based on the pictures that we see from primarily Southeast Asia. But we 100% don't want to see any of our products go into a waterway of any sort, whether it's a river or the oceans. We never want to see any of our products used in an unsustainable fashion.

What you'll traditionally see is that plastic retail bags make up roughly 1% of beach cleanup data. Then, you get into the idea of, well, if we are to ban plastic bags, we will be making an impact on the amount of plastic in the oceans. The problem becomes quickly that up to 95% of plastic going into the oceans is coming from 10 river systems in Southeast Asia or Africa.⁷ We also hear about the Great Pacific Garbage Patch, but it's typically or has been shown over and over again to be made up primarily of discarded fishing gear.

So, as a rationale for banning a product here in the United States, this is where there's a bit of a disconnect of whether we should do something. I'm not going to argue that we shouldn't do something, but I think it remains to be seen whether or not this is the right way to go. We would argue that it's not the right way.

The figure below is, I think, really a phenomenal way of understanding what is going into the oceans and where it's coming from. The larger lighter-colored circle is all of the plastic going into the oceans. Each of those smaller circles are I guess it would be 10-river systems plus all other rivers.

The Yangtze River in China is far and away the biggest contributor to plastic going into the oceans. This is an issue for all of us. Our industry is investing heavily in this. But it isn't something that is really a factor of the use of plastic bags in the United States. So then, the question becomes, are alternatives the better choice? There's an argument that if you sufficiently reuse other types of bags, they can actually overcome the overall environmental impact.

That has been shown over and over again to not be the case. Some people do, and that's wonderful. That's being a sustainable part of the environment. But every life-cycle assessment, like the one from the Recycling Authority of Quebec,⁸ looks at the other options. Their 2018 study found that a cotton bag requires between 100 and almost 3,000 uses to offset the overall environmental impact of

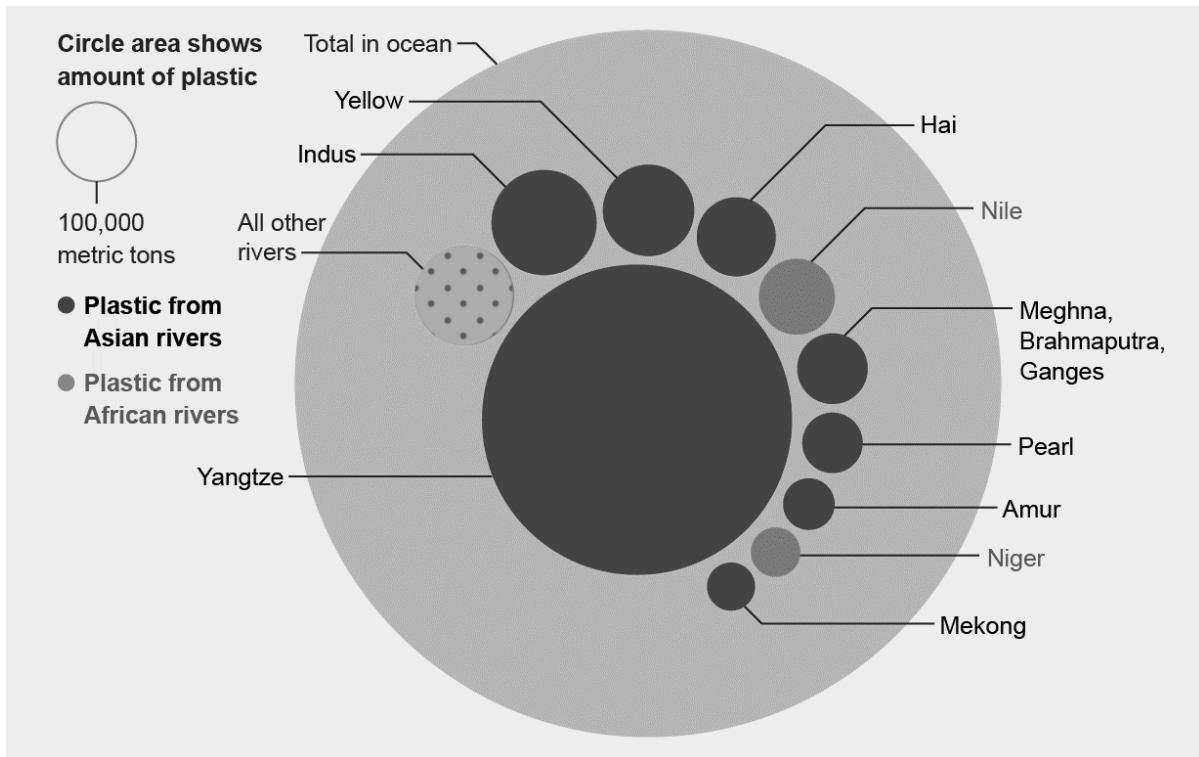
5. U.S. EPA, *ADVANCING SUSTAINABLE MATERIALS MANAGEMENT: 2015 TABLES AND FIGURES* (2018), https://www.epa.gov/sites/production/files/2018-07/documents/smm_2015_tables_and_figures_07252018_fnl_508_0.pdf.

6. ENVIRONMENTAL RESOURCES PLANNING, LLC, *2018 NEW JERSEY LITTER SURVEY* (2018), <https://njclean.org/images/VLS/2018-NJ-Litter-Survey-Final-Report-July-24.pdf>.

7. Christian Schmidt et al., *Export of Plastic Debris by Rivers Into the Sea*, 51 *ENVTL. SCI. TECH.* 12246 (2017), <https://pubs.acs.org/doi/pdf/10.1021/acs.est.7b02368>.

8. RECYC-QUEBEC, *ENVIRONMENTAL AND ECONOMIC HIGHLIGHTS OF THE RESULTS OF THE LIFE CYCLE ASSESSMENT OF SHOPPING BAGS* (2017), https://monsacintelligent.ca/wp-content/uploads/2018/03/ENGLISH_FINAL-Quebec-LCA-Highlights.pdf.

Figure 2. Top 10 Rivers Contributing to Ocean Plastics



Source: Reprinted with permission from Christian Schmidt et al., *Export of Plastic Debris by Rivers Into the Sea*, 51 ENVTL. SCI. TECH. 12246 (2017), <https://pubs.acs.org/doi/pdf/10.1021/acs.est.7b02368>. Copyright 2017, American Chemical Society.

manufacturing the bag, the farming and harvesting of the cotton, and so on.

Again, I'm not going to argue that throwing a paper bag out of a car window isn't going to be better for the environment than throwing a plastic bag out of the window. But the real problem there is that somebody is throwing something out of their car window.

I encourage everybody to read the assessment from the Recycling Authority of Quebec as well as statistics gathered by the Environmental Protection Agency of Denmark and the United Kingdom because there's a lot of fantastic data.⁹ For example, the Recycling Authority of Quebec found that nearly 78% of bags are reused primarily as trash can liners in bathrooms, bedrooms, and kitchens.¹⁰ Dirty

diapers, picking up pet waste, it all adds up to being a secondary use. J.C. alluded to the idea of "single-use" kind of being a misnomer. When you have 78% of a product being reused, I think it's a pretty good indication that it is a misnomer.

We also hear that plastic bags are there forever. What's often missed is that modern landfills are meant to entomb. They're not meant to break down. There's not supposed to be biodegradation going on. There's not supposed to be digestion happening. All of that means if you're going to put something in there, you're going to want to put the least bulky or the least impactful product in there. In these life-cycle assessments, it's taken into account that a plastic bag, because it's been manufactured with the least amount of materials and energy, is the smallest and least impactful when it goes into a landfill.

The other reason why we point this out is that the bags are coming in almost entirely contaminated, meaning they've got other stuff in them. They're being used as trash cans or trash can liners. This is one of the additional components that we talked about. People ask if we can't just use biodegradable bags. There are products in the marketplace

9. LIFE CYCLE ASSESSMENT OF GROCERY CARRIER BAGS (Valentina Bisinella et al. eds., Danish Environmental Protection Agency 2018), <https://www2.mst.dk/udgiv/publications/2018/02/978-87-93614-73-4.pdf>; CHRIS EDWARDS & JONNA MEYHOFF FRY, LIFE CYCLE ASSESSMENT OF SUPERMARKET CARRIER BAGS: A REVIEW OF THE BAGS AVAILABLE IN 2006 (Environment Agency 2011), available at https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/291023/scho0711buan-e-e.pdf.
 10. RECYC-QUEBEC, *supra* note 8.

that allow for biodegradable plastic. They're more resource-intensive to manufacture, and not as readily available. But at the end of the day, if the primary reason for that is because when they go to the landfill we want them to break down, they don't break down. And it's just an important component of discussion.

California was the first state to adopt a statewide ban on single-use plastic bags.¹¹ What they've seen varies, but I'll talk about the University of Sydney study that was released earlier this year.¹² They saw a substantial increase in trash bag sales. If you don't have those products to reuse and you were using them before, you have to find something else to use. So, you have to purchase bigger and thicker trash bags.

The other conclusion that they found is that their bag ban actually led to an increase in carbon emissions, because of the alternatives that were used to replace the need for something to carry your groceries. There's a clear indication as to when this happened and indicates those bags are being reused. And because those bags are no longer there, you have to find something else.

The other ban I'll mention is in Austin, Texas. They were one of the few municipalities that did a pre- and post-study.¹³ They found that it wasn't effective at all because they saw a slight uptick in the amount of trash coming from thicker plastic bags and reusable bags going into their landfills. They also found that stores were eliminating their plastic film recycling bins. This is a concern for us because that's where we get our feedstock for the recycling. Because of that, there was a substantial uptick in the number of bags showing up in the curbside recycling, and they are typically not recyclable that way.

I mentioned where we're coming from as manufacturers. This is the system that is set up for plastic film recycling: we have trucks that are going from a factory to a distribution center, and then there are trucks that are going from a distribution center to a grocery store. It's a closed loop. It works pretty darn well. It's how it was originally created in order to avoid these bags going into the materials recovery facilities (MRFs) because the MRFs aren't set up to take them. If a MRF wants to take them and make the investment in vent hoods or other types of things to deal with film, that's fantastic. But at least this system exists for all the products that you can think of that are made from high-density or low-density polyethylene (HDPE or LDPE).

If you brought a wet umbrella inside and you have it in a bag that's keeping the carpet dry, those bags are HDPE. Those are only recyclable because of the store drop-off pro-

gram. That's coming from the investment made by manufacturers and retailers.

So, the question becomes what do we do instead of a bag ban? Obviously, we encourage reuse. We're already at 78%. I don't think there's too much more encouragement needed. People are already doing it. But it's certainly something that people need to be aware of, that those bags can be reused and should be reused. Then, there's the recycling aspect of it. The latest EPA data show that roughly 12%, maybe 13% of bags are recycled.¹⁴ If you add that to the 78%, we're at 90%. Ten percent on a product that's not being either reused or recycled is pretty darn good.

Then, there are recycled content requirements. This is something that we comply with as an industry. We think the more end markets you have for the recycled materials is good. California currently has 20% recycled content going into their bags. We comply with that. It's going to move to 40% next year, and we will comply with that. This is an encouragement of recycling that I think needs to be better explored.

There was a Phase 2 study that just came out¹⁵; it's the New End Market Opportunities project for plastic film of all sorts. It talks about the other types of applications for the material, including railroad ties, roofing tiles, and so on. It's really great to see the innovation that's being done with these products to again provide an alternative end-of-life.

There are a number of applications in which plastic bags become part of asphalt; a percentage of it is used as a binding agent. It becomes a really great replacement for some type of virgin product that's traditionally more oil-based.

It comes down to cost-benefit analysis. Is there a benefit to eliminating a product? If your sole determinant of success is getting rid of that product, then you're going to argue that the benefit outweighs the cost. Right now, Baltimore is discussing a plastic bag ban.¹⁶ One of the retailers showed up to testify in opposition to it and made the argument that it was going to cost his store \$200,000 a year in increased costs. If he could absorb it, he would, but he can't. It has to be passed down to the consumers.

Hopefully, I've made the case that maybe \$200,000 for every retailer in requiring more expensive options is not the right way to go. But at the end of the day, we would never suggest that we shouldn't do more. We're happy to do more. We just don't think that bans are the right way to go.

11. S.B. 270, ch. 850 (Cal. 2014).

12. Rebecca L.C. Taylor, *Bag Leakage: The Effect of Disposable Carryout Bag Regulations on Unregulated Bags*, 93 J. ENVTL. ECON. MGMT. 254 (2019), available at <https://www.sciencedirect.com/science/article/pii/S0095069618305291>.

13. AARON WATERS, ENVIRONMENTAL EFFECTS OF THE SINGLE USE BAG ORDINANCE IN AUSTIN, TEXAS (Austin Resource Recovery 2015), <http://www.austintexas.gov/edims/document.cfm?id=232679>.

14. U.S. EPA, *supra* note 5.

15. PLASTICS INDUSTRY ASSOCIATION, NEW END MARKET OPPORTUNITIES (NEMO) FOR FILM, PHASE II TECHNOLOGY PACKAGE: PRODUCT TESTING AND PRODUCTION (2019), <https://www.plasticsindustry.org/sites/default/files/2019-Nemo%20Phase%20II%20Report-Final.pdf>.

16. Liz Bowie, *Baltimore City Council Approves Bill to Ban Retailers' Use of Plastic Bags, Set 5-Cent Fee Per Paper Bag*, BALTIMORE SUN, Nov. 4, 2019, <https://www.baltimoresun.com/politics/bs-md-ci-bag-ban-vote-20191105-pyrqz2acwjphxdcbh22ecik2e-story.html>.

Catherine Plume: I'm going to talk about the environmental impacts of plastics and single-use plastics. You guys have a great product. Plastic is absolutely necessary and it's ubiquitous in our lifestyles. Certainly, the contribution or the role that plastic plays in the medical community and in the sanitation community is undeniable, and we don't have viable alternatives for those right now. But I am concerned about the long-term environmental impacts and health impacts of plastics, and I'd like to explore some of those today.

Plastics are everywhere in our life. Have you been to a grocery store lately and tried to find a product that isn't in a plastic container? The glass ketchup bottle has turned into the plastic ketchup bottle, which is still recyclable, but we've been seeing these plastic pouches more and more, and I'm not sure if they're recyclable or not. In a household that tries to minimize plastic use, I still find plastics everywhere. The ketchup bottle aside, my glass bottle has a plastic lid on it. My spice jar has that little piece of plastic tape around it. And I can't buy pasta without finding it in a package that has a little plastic window in it. Plastic is everywhere and it's really difficult to avoid.

As a good environmentalist, I'm looking at the carbon impact of the product I'm buying. A 16-ounce glass jar of vinegar might have the same carbon footprint as a one-gallon plastic tub or jug of vinegar. There's a transportation and carbon footprint associated with these products as well. So, what's my best option?

Then, this one drives me crazy. When I go to a store, I try to buy in bulk. But often, that bulk product is more expensive than seemingly the same product that comes in plastic packaging. That's really annoying.

Then, there are the social aspects of it. We're taught that shampoo comes in a plastic bottle that we put in our showers and use. But if you don't want to do that, there are alternatives out there. I'm happy to use the shampoo bar. I love my shampoo bar. My friends comment on it sometimes and, yes, there is a social aspect to overcome as well when you look at alternatives.

In a household that tries to avoid plastic as much as possible, we are still inundated with plastic. I take my plastic packaging to my grocery store, and I'm pleased to know that at least some of it will become another product, but still there's a lot of new plastic that's generated. Unfortunately, a lot of products talk about how you can and that you should recycle your plastic, but very few products are out there that use recycled content. That's also frustrating.

So, what happens to your plastic? In the best-case scenario, when I put a plastic bottle into my blue bin out in my backyard, it gets sent to an MRF—a recycling facility where it's sorted. Everything is in that single-stream recycling bin, and that recycling worker is out there pulling out all sorts of non-recyclables that people put in their recycling bins and pulling out plastic bags full of recycling as the plastic bag will clog the machinery. MRF machines will sort what is recyclable into categories: paper, alumi-

num cans, plastic, but then that plastic has to be sorted again into plastic types so that it might be recycled.

If it doesn't end up being recycled, then maybe it ends up in a landfill and/or maybe it ends up being incinerated. And there are environmental costs to both. Research from the University of Hawaii shows that there are carbon emissions created and greenhouse gas emissions created through the burning and landfilling of plastics.¹⁷ That's not a great thing.

So, what happens to our plastics in the United States? The figure below illustrates what is recycled, what is incinerated, and what is landfilled and unaccounted for. The top line is container packaging, like a ketchup bottle; the middle line is nondurable plastic, like a plastic plate; and the bottom line is durable plastic, like a laundry basket.

Even if, in a best-case scenario, most of the category that is "landfilled and unaccounted for" is landfilled, then what happens to that unaccounted portion? Take, for example, a trash trap on a tributary to the Anacostia River here in D.C. Too often, this is what happens, and this is a wild area, again, a part of the Anacostia River: you see a lot of plastic bottles. You don't see a lot of plastic bags because D.C. has a bag law and a bag tax that impacts that. But we see a lot of plastic. And, in an absolute worst-case scenario, this plastic ends up in our streams and rivers, which of course affects wildlife.

Let's look briefly at some of the statistics on plastics. Per *National Geographic*,¹⁸ it takes more than 400 years to degrade. Eight hundred million metric tons end up in the ocean every year. If current trends continue, by 2050, there will be 12 million metric tons in landfills. And the acceleration of plastic production is doubling every 15 years. One-half of all plastic manufactured becomes trash in less than one year.

From the *Economist*,¹⁹ marine litter costs \$13 billion per year mainly through its adverse effect on fisheries, tourism, and biodiversity. The environmental cost of plastic pollution is \$139 billion per year. There are additives such as phthalates. They are akin to human hormones, and they can disrupt them in high concentrations. There are now bans because of their potential harm, especially to growing children.

The recent report by the Center for Environmental Law²⁰ found that the ethane crackers or natural gas used

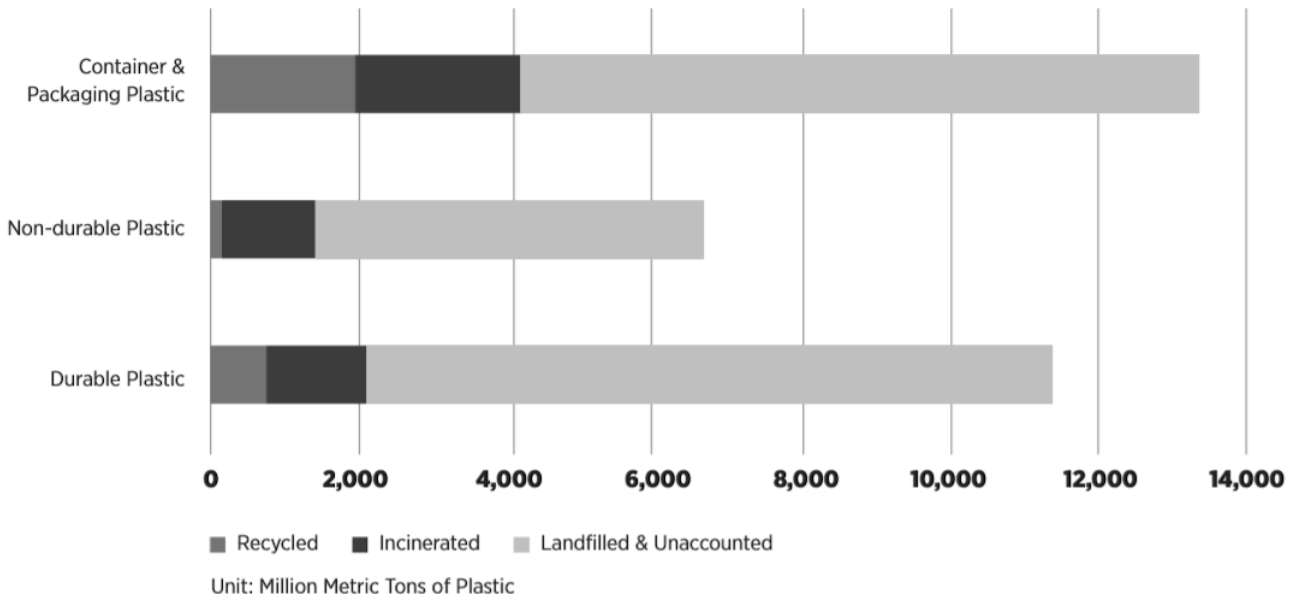
17. Sarah-Jeanne Royer & David M. Karl, *Degrading Plastics Revealed as Source of Greenhouse Gases*, UNIV. OF HAWAII, Aug. 1, 2018, <https://www.hawaii.edu/news/article.php?aid=9407>.

18. Laura Parker, *Here's How Much Plastic Trash Is Littering the Earth*, NAT'L GEOGRAPHIC, Dec. 20, 2018, <https://www.nationalgeographic.com/news/2017/07/plastic-produced-recycling-waste-ocean-trash-debris-environment/>.

19. *The Known Unknowns of Plastic Pollution*, ECONOMIST, May 3, 2018, <https://www.economist.com/international/2018/03/03/the-known-unknowns-of-plastic-pollution>.

20. LISA ANNE HAMILTON ET AL., *PLASTICS AND CLIMATE: THE HIDDEN COSTS OF A PLASTIC PLANET* (Amanda Kistler & Carroll Muffett eds., 2019), available at <https://www.ciel.org/wp-content/uploads/2019/05/Plastic-and-Climate-FINAL-2019.pdf>.

Figure 3. Generation, Recycling, and Disposal of Plastics in the United States, 2015



Source: LISA ANNE HAMILTON ET AL., *PLASTICS AND CLIMATE: THE HIDDEN COSTS OF A PLASTIC PLANET* (Amanda Kistler & Carroll Muffett eds., 2019), available at <https://www.ciel.org/wp-content/uploads/2019/05/Plastic-and-Climate-FINAL-2019.pdf>.

for plastic are emitting a whole lot of carbon dioxide each year. A factory in Pennsylvania is emitting 2.2 million tons, while another one in Texas emits 1.4 million tons. That’s the equivalent of adding 800,000 new cars to the road. There are 300 of these new petrochemical plant projects being planned across the United States. And a lot of the natural gas that is used in these factories is fracked. So, there are implications for that fracking as well, implications for our groundwater, for our drinking water.

Due to limitations in the availability and accuracy of certain data, estimates on this report should be considered conservative. Greenhouse gas emissions from the plastic life cycle are almost certainly higher than those calculated in the report. So, there are big impacts from plastic that we’re not able to capture right now.

Then, you’ll hear the other arguments from the *Economist*. Most of the plastic in the ocean comes from Europe, not the United States, and from those rivers in Asia. A British government study²¹ found that, to Matt’s point, you have to use a cotton tote bag at least 131 times before it becomes more viable than a plastic bag. Then, there’s that 10% of the 3.6 million tons of solid waste discarded each day around the world. Only 10% of that’s plastic.

But then, there’s this study that came out earlier this year from the University of Newcastle in Australia²² saying

that each of us is ingesting about a credit card’s worth of plastics every week. That’s a lot. Even if it’s half that, even if it’s a credit card’s worth a month, I can’t understand how that can be a good thing for any of us.

So, while there are definitely benefits to single-use plastics, there are also environmental and health costs and long-term impacts to their use. There’s a whole lot that we really don’t yet know. Consumer advocacy is super important, and we’re seeing the impacts of that. Maybe this is the Greta effect.²³ Maybe this is all of us.

We’re seeing businesses stand up and take a position on plastic, but I don’t believe that this is enough. We need regulation to get the plastic industry to improve their environmental impacts. Because what happens if Walmart doesn’t make their plastic target? What happens if Coca-Cola doesn’t make their plastic target? No big deal, right? Their product is still out there. We need penalties. There needs to be monitoring of their progress against their goals.

So, what are the impacts? Well, there are bans. In D.C., we saw a significant drop in the number of plastic bags found in the Anacostia River after the bag fee was intro-

21. EDWARDS & FRY, *supra* note 9.

22. DALBERG ADVISORS ET AL., *NO PLASTIC IN NATURE: ASSESSING PLASTIC INGESTION FROM NATURE TO PEOPLE* (World Wildlife Fund 2019), avail-

able at https://d2ouvy59p0dg6k.cloudfront.net/downloads/plastic_ingestion_web_spreads.pdf.

23. ELLEN McARTHUR FOUNDATION, *THE NEW PLASTICS ECONOMY GLOBAL COMMITMENT 2019 PROGRESS REPORT* (2019), available at <https://www.ellenmacarthurfoundation.org/assets/downloads/Global-Commitment-2019-Progress-Report.pdf>.

duced.²⁴ We've seen similar impacts in the city of San Jose, California,²⁵ and then we see the impact of the number of plastic straws and stirrers that have been picked up along the coast of California as plastic straw bans and stirrer bans have been put into place.²⁶

Then, the regulation takes a long time to get through. There are all sorts of lobbyist groups who are against these bans, who are putting a lot of money toward avoiding these bans. I urge you as a consumer to enact your own regulation for your own household. Take your own action against plastics. We may not save the world by this, but you can start something. I urge you to educate yourself about the options that are out there. Instead of the glass bottle of soda water, instead of the plastic bottle, maybe I buy and invest in a machine where I can make my own soda water or I buy my soda water in an aluminum can that is infinitely recyclable.

I start supporting groups that are committing to environmental commitments and reducing their environmental impact, startups like Loop. Loop is a company from which you can buy products in refillable containers that you can send back and have refilled again and again and again. We have startups here in D.C., like Plastic Tree. They are picking up items like wine bottles and plastic pillows and selling them back to vendors so that the items can be reused again.

We have restaurants here in D.C. that are sticking to plastic bans and reducing their waste streams. Then, there are options like, instead of buying new, looking at Craigslist or eBay for those things that you want to buy. Blow a hole in that single-stream waste production and create your own circular loop; that is really a part of the solution.

So, I urge you—and you can make this fun—to see what you can do, as there are so many things to help reduce plastics in your life and make the world a better place—for example, participating in next week's D.C. Food Recovery Week that's talking about food waste and ways to eliminate it from production; putting solar panels on your house; freecycling, which is taking what one person thinks is absolute trash and finding someone who takes that “trash” and makes it into something else; creating your own garden; and making your own yogurt and keeping 52 of those big containers of plastic out of the waste stream because you made your own yogurt every year. Why? It's because this is Earth. This is where we live.

24. Alice Ferguson Foundation, *Achieving a Trash Free Potomac River: Policies That Work*, <https://fergusonfoundation.org/trash-free-potomac-watershed-initiative/achieving-a-trash-free-potomac-river-policies-that-work/>.

25. Memorandum from Kerrie Romanow, Director, Environmental Services Department, City of San Jose, to the Transportation and Environment Committee (Nov. 20, 2012), available at http://www3.sanjoseca.gov/clerk/CommitteeAgenda/TE/20121203/TE20121203_d5.pdf.

26. Patrick McGreevy, *California Lawmakers Vote to Restrict Use of Plastic Straws, Keeping State in National Spotlight on Environment*, L.A. TIMES, Aug. 23, 2018, <https://www.latimes.com/politics/la-pol-ca-plastic-straw-limits-california-20180823-story.html>.

I'm an environmentalist and I'm on my soapbox, but I think that we are really messing this place up. We've done so much harm to the planet. I really think if the best you can do is reuse your plastic bag or make sure that it gets recycled, then so be it. But please do something. We all need to do something to make this world a better place right now.

Caitlin McCarthy: We're going to start taking questions.

Audience Member #1: I'll ask one question for Matt initially. With the plastic bags, there was something that you said that I liked: that there was a closed loop. I would say for a fact that most Americans do not know about recycling. I mean like all the packaging—God forbid, my little dog's plastic Frisbee—of course it had to have plastic bags around it and bubble wrap. But why? Can I stick bubble wrap in the store drop-off recycling bins too?

Matt Seaholm: Yes. There are a few bubble wraps that are made out of two different types of plastic. But with the vast majority, yes, because they're made from polyethylene.

Audience Member #1: I was religiously stuffing my things in the bins, but you said that only 11% of those plastic retail bags are being recycled?

Matt Seaholm: Yes. The primary reason for that is the competition is reuse. People aren't bringing them back to the store if they're using them for trash can liners or whatever. So, that's why our number ends up being so low. The vast majority of the stuff you're talking about can be recycled.

One of the things we're working on with our members and their customers is doing a better job of labeling the bags and the other types of products, by saying “Store drop-off.” Because I live in an apartment in the D.C. area, I go into the room where all of the posters are to tell people how to recycle. It's frustrating to see how people don't even look at them.

There's no doubt we need to do a better job, not just as an industry, but I think in general, to better educate people how to recycle and keep those things that aren't supposed to be in the single-stream recycling system out of it. That's what we're trying to do because the cleaner the material that is coming back to us, the easier it is to recycle. We try. We certainly push recycling as an option, but we can do better. In fact, it's one of our pushes as an industry to work with retailers to do that.

Audience Member #1: Have you done a deep-dive partnership with a city like Washington, D.C., to pilot ways to get beyond the retail bags?

Matt Seaholm: Listen, we can do more. We're always happy to have as many conversations with any municipality that wants to focus on that. We've got some good ones, the number of places that have decided not to go down the ban route because they see that the education side of things can actually be pretty successful. I'm always happy to do it. That's a good idea.

Audience Member #2: I never understood why China stopped recycling or taking our plastics.

Jean-Cyril Walker: There are a couple of reasons. I can't tell you the primary reason, but I think the two main reasons are, one, there was a concern that the feedstocks that they were getting for recycling were overly contaminated. For those of you who are disposing of plastics, typically they should be clean, you should rinse the product before it goes in the bin. It is cleaned with caustic and some other chemicals through the recycling process, but there's still contamination going in—and not only foreign matter contamination, but also incompatible plastics. So, for example, the plastic that's most recycled is PET. There can be some other components that are not necessarily compatible with that stream. That was one issue.

I think the second one was part of the trade war. There was this notion that they were getting a lot of waste from us and that the timing seems to be right—I know you're saying no, but that's certainly not what I'm hearing from my clients and other constituents about what they believe on their rationale.

Catherine Plume: I think it is also that China has their own problems with plastic and the environmental conditions that their workers and people are exposed to. On the Internet you can see some horrible pictures of conditions that you wouldn't want anyone working in. They recognize that they didn't have control of the situation. They had their own plastic issues and they just said no. The allowable contamination for the plastics that are coming into China is so low that the people I've talked to in the industry have just said that they can't meet those standards and that we need to find a better solution.

Honestly, I think it's a good thing. We need to take responsibility for our own trash. We need more products that are made out of recycled materials. We can't keep this more, more, more virgin plastic material coming into our system. It's got to stop. We need to create a plastic recycling loop.

Jean-Cyril Walker: I think you'll see that's sort of what's behind the circular economy approach in the EU. Basically, taking ownership of their issue. Not only to do that, but to sort of implement the whole notion throughout the supply chain to our product development. This is not necessarily occurring governmentally here in the United

States, but certainly global companies that are having to meet the requirements in the EU are looking at approaches here in the United States as well because, I agree, relying on China to handle or address this issue is not the most effective way to go.

Audience Member #2: What's happening to all that plastic that formerly went to China?

Jean-Cyril Walker: That's a good question. Some of it is staying at the MRFs. They can't distribute it or find a buyer. You can track prices for the feedstock material to see how it's dropping. Then, it's being landfilled. I know that some folks are using it for test trials for certain other technologies. But most of this material is staying for a very long period of time. There used to be a residence time in MRFs for these types of materials, that would be 30 to 60 days depending on how active the recycling was. Now we're seeing bales staying much longer and creating environmental issues at those facilities themselves before they're being sent off to landfills.

Caitlin McCarthy: One person asks if any of our panelists believe that it would be possible to really live plastic-free or if there are alternatives that are like plastic that could be fully implemented?

Jean-Cyril Walker: No. If you think of plastic in a global sense, in terms of its uses, no. I mean if you're going to narrow the use case for bags or certain other types of products then yes, there are alternatives. Obviously, paper. If you look at your food packaging, you look at your milk, your juice, most of those have actually been converted to paper-board although I will caution that most of these also have a plastic coating because you do need plastics for preservation, for longevity in terms of transport and shelf life.

I think it's a very broad question. Again, that's my concern about the discussions with regard to plastics because it depends on the application. We can think of a variety of different ways. The thing about plastics—and the reason it's such a problem, but also why it's such a success—is that per pound in terms of tensile strength, flexibility, and all these other performance characteristics, it's really the only material that we have found in terms of these polymer chains.

For those who don't know, there are a variety of different types of plastics. Not just PET, but there's polyvinyl chloride (PVC), and there are a variety of different combinations. So, when we talk about plastics, we're talking about a heck of a lot more materials than you're thinking about. But they're all in essence carbon-based monomers that have been put into a chain that allows them to have the same tensile strength as a lot of stronger materials. I don't think we can live in a plastic-free environment glob-

ally, but I think for certain applications you certainly could replace it.

Lillian Power: I think particularly in the United States, as Cathy so well explained, it's like we are living in a plastic world, so much so that we don't even notice it oftentimes. It completely surrounds us. There are definitely ways to drastically reduce our dependence on our day-to-day plastics. I think the whole straw issue is a very small piece, but a great example of that. Up until the past few years, people didn't really think about plastic straws. It's part of our day-to-day lives. Now we very much understand the environmental impacts that they have.

Now, you actually see tremendous innovation in the industry. We're seeing alternative new products being made. We're seeing tremendous growth in biodegradable products. Different types of straws—pasta straws, paper straws, and so on. All these other things that are coming out as alternatives that are able to come in and replace that dependence. Or just a good old change in human behavior: just sip from the cup if you can. So, yes, I think it's a very small piece, but it's an example of what can be applied in many other avenues of where we see plastic as the dominant material in use right now.

Catherine Plume: I see the examples of people who have their family of four. Their trash for a year is in a mason jar or something and, honestly, I don't know how they do it. If you've got kids, you don't have that much time: you're on a really busy schedule, the easy thing is to grab what's there. I wish it weren't so time-consuming to be more sustainable. I think where you can have the biggest impact is really on reducing your own consumption, going without a straw, buying something used versus something new, and looking for viable alternatives there.

Caitlin McCarthy: From one of our online participants, for J.C.: With regard to chemical recycling, Coca-Cola is investing in this technology and recently piloted a plastic bottle made of marine litter in Europe to show the potential of the technology. Do you have any other examples that you could share with us?

Jean-Cyril Walker: Unfortunately, not. Most of the examples that I am familiar with are under a seal of confidentiality because the technology is still being developed. But I expect that announcements will be going out later this year or in the first half of next year with regard to sort of plant-scale development for some of the chemical recycling. This is mostly in Europe, I'll be honest. There is still development occurring here in the United States, but it's much more advanced in Europe.

Anything that you do, any material that you use to feed, clothe, and support eight billion people is going to have an adverse impact on the planet. I mean it's just the nature of

the beast. It's a matter of picking your poison. To me, the conversation that we've had here reinforces the notion from my view that behavior plays an important part and that the alternative assessment plays a very important part in terms of the decisionmaking.

Audience Member #3: I've got a question for Matt specifically regarding bag recycling. You mentioned briefly that consumers don't know where to bring their plastic bags and they end up putting them in their blue bins. A lot of these municipalities aren't prepared to deal with that, so they'll contaminate the cycle by getting wrapped up in their machinery because you need to chop them up into pellets first.

What would you suggest to make that process a little bit more robust? Would you say trying to make MRFs as optimized as possible? Or funding perhaps to transition those away from clean MRFs to dirty MRFs? Or is it more so making sure that the loop is a little bit more robust by maybe having more bins, at the grocery stores that are prepared to deal with plastic bags as well as just in general? What would you say is a good move forward to deal with this issue?

Matt Seaholm: I'd say all of the above. I think there's certainly a need to modernize MRFs. You go to a vast majority of them and they've got machines built in the 1980s, maybe early 1990s, and you end up sorting a stream that is incredibly contaminated because of the lack of education in knowing what is recyclable and what's not. We've found some pretty good success. I wish we could scale it up.

We don't have the resources to do it, but we've had some tremendous success in places where we go to elementary schools and teach kids how to recycle. The fact that their parents don't know what to do with all of these plastic bags, when they bring them back in; we're teaching the kids, but we're also teaching their parents what to do. That's one small part of what we can do to improve the education side of it.

I think it was mentioned earlier—can we partner with more municipalities to raise awareness that the store drop-off is the right way to go? Absolutely. The How2Recycle logo is another one. We're talking with our members and others about putting the number two on there. Does anybody know what a two means? You know, that's not a sufficient way of teaching people how to recycle. I think the Sustainable Packaging Coalition is doing a great job in improving the how-to-recycle education system on all sorts of products, but that's one part of what we need to do.

Still the biggest competitor for us in recycling is the reuse. It's frustrating when I see somebody take the recycling and put it into a plastic retail bag, tie it up, and throw it into the bin as though they're doing something good by putting it all together. They're not trying to contaminate the recycle stream, but it's just something that they do

because they haven't been taught otherwise. There's a lot that we need to do to improve that.

Audience Member #4: This question goes to contamination. How do you process the bio- and the plant-based plastics that we're starting to see a lot more of?

Jean-Cyril Walker: This goes into a deeper conversation about claims in communications about environmental performance that I think have not actually kept up with the issue of the plastics problem. I will say the law is very far behind and much more restrictive. But what I am hearing from some of my clients is that a primary resin is a significant portion of the material or of the recycling stream. So then, any sort of blend should be able to go through depending on the concentrations. And they're doing tests to that effect.

Plant-based plastics, however, I think should actually be classified as sevens not only under the law but because there's an issue with recycling them in the current technology. So, what you have is a tension between a product that, on the one hand, is arguably environmentally better because of its sourcing, but on the other hand its end-of-life creates some problems under the current technology.

One other reason why they are looking at chemical recycling is because certain technologies will be sort of agnostic about that material and will be able to address the plant-based materials. But right now, they should be sevens. They're not any of the actual streams that are being recycled. There are contaminants in them.

Lillian Power: I would also say in many plant-based plastics we're not talking about recycling. We're talking about compostability versus recyclability. There's the Biodegradable Products Institute that certifies polylactic acid (PLA) plastics, plant-based plastics, for compostability. That being said, they need to be composted in industrial-grade facilities where industrial-grade heat and pressure break them down.

It's one of those questions where it's transitioning over from this question of how you recycle these things to, okay, now you have these plant-based plastics, but really for them to go a full-circle life cycle, they need the composting facilities. So, you really need to have your eyes on several industries to think through the environmental impacts of these different products.

Jean-Cyril Walker: Right. Let me caution that there are very few industrial composting facilities in the United States that will require you to qualify your claim for compostability to being industrial, and there are very few facilities that may be available or not available in your location. The more general compostability claim is assumed to be a backyard composting claim. Some of the plant-based plastics have been able to meet the standard.

California has the most restrictive law.²⁷ The other point about this is that in California, it's pretty much against the law to make a "degradable" claim for any plastic product unless you meet three standard specifications, none of which apply to the most general form that you dispose of plastics. So, compostability is a little bit easier. There are two standards that you can meet in California, and companies are trying to meet those standards. But there's a lot of litigation going around these claims, and I think companies need to be careful as they look to make these messages that are very important messages for the brand for communication purposes.

Catherine Plume: And consumers need to be careful, right? I don't think the plant-based plastic is necessarily the easy solution to transition. There's never going to be a simple alternative. And, unfortunately, the PLA plastics are not a simple alternative.

Caitlin McCarthy: An enormous thank you to our fantastic panel.

27. See CAL. PUB. RES. CODE §§42355-42358.5.