After the Fact | Ocean, People, Planet: Preventing Ocean Plastic Pollution

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TRANSCRIPT

Dan LeDuc, host: Welcome back to "After the Fact" from The Pew Charitable Trusts' and our series, "Ocean, People, Planet." I'm Dan LeDuc. Today we're talking about an everyday product many may take for granted.

Plastic has made its way from grocery stores, hospitals, our homes, and businesses to our streets and landfills and, much of it, to the ocean. About 11 million metric tons of plastic enters the ocean each year—the equivalent of a dump truck emptying plastic into the ocean every minute. You may not see it out in the depths but it's there, doing damage.

[Music starts]

That 11 million is our data point—and reducing it will take innovation and commitment. But experts say it's possible. We are speaking with two of them: Richard Bailey, an environmental systems professor at Oxford University, and Winnie Lau, who heads up Pew's preventing ocean plastics project.

[Music ends]

Dan LeDuc: Together, you've worked on an important report that looked at how much plastic is in the ocean. Let's start there if we could.

Richard Bailey, environmental systems professor at Oxford University: There's a tremendous amount of plastic going into the oceans. We're currently seeing something like 11 million metric tons every year going in. If we stay on our present course, we continue our business as usual, that's likely to increase to something like 29 [million] to 30 million tons every year. So, it's a huge, huge problem. This is plastic of a variety of different types, variety of different sizes, different chemical compositions—so it's having a variety of impacts.

Dan LeDuc: The ocean's this big, vast place. Some may wonder, well, some of this trash, can it be absorbed, or are we really starting to see the effects? Winnie, how do you define the effects of plastics in the ocean?

Winnie Lau, project director of preventing ocean plastics at The Pew Charitable Trusts: We are definitely starting to see the effects of plastic in the ocean. About 800 marine species or more are impacted by plastic.

[Pensive music]

They're eating plastic; they're entangled in plastic. We're starting to see images of animals washing up on shores because their stomachs are full of plastic. They think they're full when, in fact, they're not, and they are starving to death. And we, people, are also not escaping either. We find plastic in our seafood and our drinking water. So, it's very alarming.

Dan LeDuc: So how did we get here? Plastic is part of our daily lives, right? We go to a fast-food place and there are the straws and the packaging, or we go to the supermarket and most of what we buy is wrapped in plastic. I get it. Has just the volume of all of that in our society increased in recent times?

[Music picks up pace]

Winnie Lau: Yeah, definitely. Plastic production has been growing exponentially over the last 50 years, and it's projected to double again in the next 20 to 30 years, the amount of plastic that's being produced. The systems that handle the plastic waste that's generated, they're not catching up at the same pace as plastic production. So then the unfortunate outcome is that it's ending up wherever they can—and in this case, our environment.

Richard Bailey: I think you made a very good point earlier as well, which was that surely the ocean is big enough. It can absorb some amount of pollution or some amount of punishment. And that must be the case to some extent, but that's part of the problem as well. And it's analogous to many other environmental problems, which is that you often don't see the impacts. In the case of plastic, you just don't see it. It looks the same whether there's plastic at the bottom of it or not. And if this plastic was mounting up on our doorsteps, we'd notice it and we'd have done something about it years ago. But the fact is, we have had this big sink in the environment that plastic can go into. We are starting to see the direct impacts now, so awareness is rising.

[Music ends]

Dan LeDuc: I've read that the plastics even have been found in certain species that are thousands of feet underwater now. That just speaks to how ubiquitous it is. But again, to your point we don't see it.

Richard Bailey: A lot of things that we produce are degraded naturally, but some things aren't, and plastic is in that category. So, it can live for decades or

centuries without being broken down. And so there's a sense in which it's broken down into smaller and smaller pieces, but those pieces remain and it's very difficult for nature to break them down beyond a certain level. So, in all likelihood, they will be there for a long time to come.

Dan LeDuc: Well, we see efforts in a lot of communities to discourage use of plastic straws or plastic bags. Are those sorts of efforts valuable or are we needing to talk about a bigger systemic change?

Winnie Lau: Those efforts have been tremendous in raising awareness of the issue and really galvanizing momentum and interest in all of us to do something about this problem, but the plastic problem is much bigger than that.

We have packaging wrapping all of our goods. We have containers that we use for food. All of that plastic waste has to be dealt with. The problem is so huge we're going to need everybody to be involved and take a role in solving this problem.

Dan LeDuc: How ubiquitous is plastic in the sort of things we may not even think about originally? It's in our clothing, some elements of our clothing?

Winnie Lau: A lot of our clothing now is made of basically plastic fibers. And that is going to increase quite likely because there is a movement to take plastic and recycle it into plastic textiles.

[Quick music begins]

These microbeads are added to our body washes and our face washes, and that's actually plastic beads, tiny, tiny plastic beads that get directly washed into our waterways. Tires. We call them rubber tires, but they are plastic rubber. Paint. Paint is actually predominantly made up of plastic polymers. Through wear and tear and weathering, tiny pieces of paint chips come off and then they end up on land and in our water.

[Music ends]

So plastic is extremely ubiquitous in all of our lives, and it will take a tremendous amount of effort to really use it in a sustainable way so that the plastic doesn't end up in our environment.

Dan LeDuc: There has been a real effort in the U.S. and elsewhere to encourage recycling. How much of plastic is actually recycled?

Winnie Lau: Globally, it's about 15%, based on our research. That means 85% of the plastic is not being recycled. And in the U.S., the number is actually lower than the global average, at about 8%.

[Slow, thoughtful music begins]

Richard Bailey: There's a collection gap. In round numbers, about half of the waste is produced in rural areas where the economics of collection make it very difficult. So just to give you a number that kind of puts that into perspective: 40% of the plastic waste that we produce ends up in the environment. It's a very large fraction. And as Winnie said, it's because we don't have the systems to deal with that level. You know, we want to solve the problem. We want to collect the waste. We want to do responsible things with it. But just the collection problem alone is enormous. In order to collect the waste that we need to collect to make progress, we need to connect about half a million people to the collection services every day between now and, say, 2040.

[Thoughtful music fades out]

Dan LeDuc: We've recognized a problem. The problem is getting bigger quickly. It feels like we're trying to put brakes on a speeding car, and we know we've got to slow it down, yet we also recognize it's a big, holistic problem. So, are there short-term things that are immediate and obvious that can be happening sooner before we tackle the holistic issue?

Winnie Lau: There are definitely lower-hanging fruit—stopping the use of plastic that are not needed. Do we need to wrap the t-shirts that we're buying, each and every single one of them, in a plastic bag? Removing that plastic packaging won't affect the products.

There are companies trying out refill systems for our detergents. These types of solutions are already starting, and they're taking off. At the heart of it, that's what we want. I'm not trying to buy a plastic bottle. I'm trying to buy the detergent.

And so, this is where everybody has a role. Companies have a role. Governments have to put in place the policies that allow us to reuse bottles. And then as individuals, we also need to make the choice to do such a thing. It's a system in that you need governments, you need businesses, but we also need individuals to be part of the solution.

Dan LeDuc: You have developed now a tool for countries and science communities that want to examine their use of plastics and to make changes. Can you tell us about this tool and how it works?

Winnie Lau: It's a tool that allows us to follow the flow of plastic from production to what happens after we are done using it. Does it go to be recycled? Does it get disposed of in safe facilities like engineered landfills? Or do they end up discarded accidentally or purposefully on land or in the water? So it follows how much plastic is moving through these different pathways, and what it can do is to

help us think about different scenarios. What if we were to increase recycling rate, increase collection? How could that reduce our plastic pollution? What if we were to increase collection and make sure that they end up in engineered landfills rather than dump sites that are not controlled? If we can increase collection, build more landfills, how does that affect our system?

Richard Bailey: If it was a very data-rich problem, we could look to the data and we could try to learn what we could from the data directly. We don't have enough data to do that. There's lots of uncertainties in the data. And so the only way to really make progress and do what Winnie was describing like these "what if" scenarios—what if we were to do x? What if we were to do y? We need to put in the best data we can get our hands on into a model, and the model can take care of that complication for us. Then we can use that as a way of augmenting our thinking about these things and do these kinds of "what if" scenarios.

Dan LeDuc: Well, the sort of work you're doing feels like it's at the front of this wave of attention. Is the science community at large and is industry, which has to make change, interested in this yet?

Richard Bailey: I would say that there's a huge amount of public interest in this. It's something that is in the news relatively frequently. My own personal experience talking to people is that people genuinely care. There's a lot in the general media about plastic and about environmental issues. One of the things that we're particularly interested in pushing is what the possible solutions might look like and what alternatives are there.

[Upbeat music begins]

One argument may be that we can recycle our way out of this problem. If we just collect and recycle, we can keep producing, keep using this fantastic material that plastic is, and we can recycle everything, and everything will be great.

An alternative view might be no, we can't do that. We need to substitute for different materials. And as long as we can substitute paper and glass and those other things, then we'll be OK. You know, etc., etc. There are many competing views. You can't really see a way through what those views entail and what they really mean without something like a model.

We wanted to try and find which of those solutions look reasonable, which ones don't, what combination of possible solutions might look like. Based on our findings, we think if we put everything together, we can solve something like 80% of the problem overall plastic waste.

And the conclusion we came to was that there isn't a single solution. There are multiple different kinds of solutions with different flavors, and it's only really when you put them together that you really make progress.

[Upbeat music fades out]

Winnie Lau: We've had different policies in the past to try and tackle the plastic pollution problem. But oftentimes, those policies were focused on plastic bags. And they're a great start to solving this problem, but I think there is increasing recognition that we need to do more. And so, having a tool like this helps governments help organizations really think through what are the most effective. What are the biggest bang for the buck in terms of the policies they can put in place and put a big dent in solving the problem?

Dan LeDuc: It sounds like this tool is being embraced by the scientific community. How is it being used so far?

Winnie Lau: Different countries and nonprofit organizations have reached out to us to see if we can use this tool to help them analyze what the potential solutions are in a given country. We can take it down to the country level and get country-specific data.

Another aspect of the tool that's really important is getting stakeholders together to talk about the issue and then agreeing on what data to put into the tool. This is actually a very crucial conversation that doesn't always happen within a country, but when it does, then it allows all the different sectors, all the different groups to come together—one, to really understand the problem collectively, and then two, to collectively agree on what the most effective solutions would be.

Richard Bailey: If we have the conditions, we have the best data available for the context, we feed that data into the system, into the model, we can then play around with different possible interventions and we can see what the outcome looks like both economically in terms of jobs, earnings, costs, but also plastic and how that plastic flows around the system—even how it affects things like greenhouse gas impacts as well. So having the ability to try these different things at different scales in specific locations is where we think we'll probably start to have the most impact.

Dan LeDuc: Do you sense there is greater public appetite now—among the general public, but also among industry and government leaders—for change? It strikes me as sort of similar to what we're experiencing with climate change. We've noticed the effects a half-century ago that things were changing, and it's gotten worse in recent years, just as plastics was noticed and has gotten worse in recent years. But there seems to be growing sentiment among the general

public and policymakers that we need to do something about this. Do you have some optimism, sort of that there is this feeling out there?

Winnie Lau: Yeah. Absolutely. There's definitely a lot of momentum around finding solutions to this problem. In fact, at the most recent U.N. Environment Assembly, countries came together and agreed to start launching negotiations for a global plastics treaty. This is a recognition that this is a huge problem and will require global cooperation to solve.

Dan LeDuc: This season of this podcast, we have been looking at the state of the ocean. And if you look over time, we've seen it threatened by overfishing. We've seen it threatened by climate change, and that's heating the waters and changing and making it more acidified. And now we're talking about plastics. Of course, all three of these things mean humankind has been intervening. Could you put all of those things in context where plastic fits in with these sort of long-term problems that the ocean's experienced?

Richard Bailey: One feature of the ocean system—and I'll argue all environmental systems—which is sometimes overlooked is the interconnectivity between them and the possible for synergies between impacts. And so it may be, for example, that ocean acidification has a particular level of impact, but in the presence of a pollutant, ocean acidification is felt even more strongly. And if you add into that some higher temperature—so less oxygen in the water, for example—then the organisms in the water may be physiologically stressed by the warmer water. You then hit them with a little bit more acidity and you hit them with some pollution, which does a variety of things to their physiology.

The impact of those three things together can be bigger than the sum of the individual impacts, and so the synergies in the system are actually really important as well. And it may be that the synergies are more important than any one of these problems in itself.

It's more important than ever that as we continue to stress these systems, we think holistically about them, and we don't choose a particular favorite problem and solve only that problem with the absence of all the others.

Winnie Lau: These are all urgent, global problems that need attention and solutions. And sometimes, a solution can solve multiple problems. And another recognition—at least between climate change and plastic—is that they both come from the same source, which is fossil fuels. So some solutions that can tackle climate change might be able to also tackle plastic pollution.

And one of the things that we've learned is that these are all very complex and enormous problems, and it is going to take solutions and actions across all

society around the whole world working together collectively and individually to solve these problems.

[Quick, instrumental music begins]

I do have a lot of hope that we can solve this problem, and because of all of the energy and all of the passion around solving our environmental issues, I'm very hopeful that we can do this in the next decade or two.

Dan LeDuc: Well, Richard Bailey of Oxford University and Winnie Lau from The Pew Charitable Trusts, thank you very much.

Richard Bailey: Thank you.

Winnie Lau: Thank you, Dan.

Dan LeDuc: And thanks to you for joining us today. For more information on the ocean and its challenges or for past episodes in this series, please visit pewtrusts.org/oceanpeopleplanet. And stay tuned for more episodes in this series.

I'm Dan LeDuc, and this is "After the Fact" from The Pew Charitable Trusts.

[Instrumental music ends]