
Committee Meeting

of

ASSEMBLY ENVIRONMENT AND SOLID WASTE COMMITTEE

"The Committee will meet to receive testimony from invited guests concerning per- and polyfluoroalkyl substances (PFAS) in the State's waterways and drinking water supplies."

LOCATION: Committee Room 9

DATE: March 10, 2022
2:00 p.m.

MEMBERS OF COMMITTEE PRESENT:

Assemblyman James J. Kennedy, Chair
Assemblyman Sterley S. Stanley, Vice Chair
Assemblywoman Shama A. Haider
Assemblyman John F. McKeon
Assemblyman Donald A. Guardian
Assemblywoman Bethanne McCarthy Patrick
Assemblyman Gerard Scharfenberger



Also Present:

Carrie Anne Calvo-Hahn
Office of Legislative Services
Committee Aide

Catherine Tung
Zixuan Wang
Assembly Majority
Committee Aides

Thea M. Sheridan
Assembly Republican
Committee Aide

Meeting Recorded and Transcribed by
The Office of Legislative Services, Public Information Office,
Hearing Unit, State House Annex, PO 068, Trenton, New Jersey

James J. Kennedy
Chair

Sterley S. Stanley
Vice Chair

Shama A. Haider
John F. McKeon
Donald A. Guardian
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NEW JERSEY STATE LEGISLATURE

ASSEMBLY ENVIRONMENT AND SOLID WASTE COMMITTEE

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REVISED COMMITTEE NOTICE

TO: MEMBERS OF THE ASSEMBLY ENVIRONMENT AND SOLID WASTE COMMITTEE

FROM: ASSEMBLYMAN JAMES J. KENNEDY, CHAIR

SUBJECT: COMMITTEE MEETING - MARCH 10, 2022

The public may address comments and questions to Carrie Anne Calvo-Hahn, Committee Aide, or make bill status and scheduling inquiries to Stephanie Cenneno, Secretary, at (609)847-3855, fax (609)292-0561, or e-mail: OLSAideAEN@njleg.org. Written and electronic comments, questions and testimony submitted to the committee by the public, as well as recordings and transcripts, if any, of oral testimony, are government records and will be available to the public upon request.

The Assembly Environment and Solid Waste Committee will meet on Thursday, March 10, 2022 at 2:00 PM in Committee Room 9, 3rd Floor, State House Annex, Trenton, New Jersey.

The committee will meet to receive testimony from invited guests concerning per- and polyfluoroalkyl substances (PFAS) in the State's waterways and drinking water supplies.

The State House Annex has reopened to the general public. The Committee will meet in-person and there will not be an option to participate by telephone or video. Masks are mandatory inside the State House Annex, including in Committee Rooms, hallways, and other facilities. Please visit <https://www.njleg.state.nj.us/Publications/PDF/JMC%20Rules.pdf> for more information.

An individual interested in registering their position with the Committee may fill out the Registration Form located on the New Jersey Legislature Home Page under the applicable Committee heading. For those individuals who wish to testify, please check the box "Do you wish to testify?" on the Registration Form. The Registration Link will close at 3:00 PM, Wednesday, March 9, 2022. An individual is not required to pre-register in order to register their position with the Committee. Witness slips will be available in the Committee Room and written testimony will be accepted at the Committee Meeting.

(OVER)

The following bill(s) will be considered:

AJR38	Designates April 16 of each year as "Upcycling Day" in State.
Stanley/Kennedy	

Issued 3/4/22

*Revised 3/7/22 - AJR38 has been added for consideration.

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ASSEMBLYMAN JAMES J. KENNEDY (CHAIR): Good morning. I would like to welcome everyone, and thank you for coming.

We are here today for the meeting of the Assembly Environment and Solid Waste Committee. And today's topic is very important: The State recently made public its first list of utilities whose water violates new health standards.

Seventy-four public water systems in New Jersey are exceeding the PFAS, or what they refer to as *river chemicals*. These chemicals don't break down in the environment and they stay in the human body for years, so it's important that we attempt to-- Well, since you can't create nor destroy matter, we've got to figure out something else to do with them.

There have been more places of higher concentration of PFAS chemicals than many other states. In New Jersey's defense we are also -- I read once we're the most populated place on the face of the earth outside of New Delhi, per square foot. So that may be something I read in a comic book, (laughter) but I'm sticking to it. So we have, today, Commissioner LaTourette and other experts to learn about these chemicals in the state's waterways and drinking water supplies.

With that, Carrie Anne, may we have a roll call.

MS. CALVO-HAHN: Yes, thank you.

Assemblyman Scharfenberger.

ASSEMBLYMAN SCHARFENBERGER: Here.

MS. CALVO-HAHN: Assemblywoman McCarthy Patrick.

ASSEMBLYWOMAN MCCARTHY PATRICK: Here.

MS. CALVO-HAHN: Assemblyman Guardian.

ASSEMBLYMAN GUARDIAN: Here.

MS. CALVO-HAHN: Assemblywoman Haider.

ASSEMBLYWOMAN HAIDER: Here.

MS. CALVO-HAHN: Assemblyman McKeon is on his way.

Assemblyman Stanley.

ASSEMBLYMAN STERLEY S. STANLEY (Vice Chair):
Here.

MS. CALVO-HAHN: Chairman Kennedy.

ASSEMBLYMAN KENNEDY: Here.

MS. CALVO-HAHN: Thank you.

ASSEMBLYMAN KENNEDY: Today we have a few guests that are going to speak, and I'll ask that you keep your remarks brief and not to repeat what the prior speaker has already said -- so there's no pressure on the first speaker, by the way. (laughter)

There will be time for questions for the members.

Commissioner, the floor is all yours.

SHAWN M. LATOURETTE: Good afternoon.

Chairman Kennedy, Vice Chairman Stanley, and to every member of the Committee, thank you for inviting the Department of Environmental Protection to address your Committee today about this important topic.

If I could, for a moment, just make some introductions. For those of you I don't have the pleasure of knowing already, we should get to know one another better. My name is Shawn LaTourette; I have the pleasure of serving as the State's Commissioner for Environmental Protection. And with me today is Associate Commissioner for Science and Policy at DEP, Katrina Angarone.

I will start and give some remarks. I believe that my written testimony was handed out to you all; I apologize for not sending it in advance, I worked on it up until my departure a few minutes ago. I'll try to be as brief as I can, because the topic is so important and the invitation that you were so gracious to extend to me asked a very broad question: What is PFAS, and what are we doing about it? So I want to answer that.

The DEP -- we have the honor and the privilege of serving the state and its residents as your environmental and your public health regulator, the steward of our publicly-owned lands and natural resources, but also as your science agency. And reporting to Associate Commissioner Angarone is DEP's Division of Science and Research. And for years the Division of Science and Research, and our Water Resource Management Program, and our Hazardous Site Remediation Program, and so many others, have worked to identify PFAS risks; and by spearheading what has been global, cutting-edge science and policy, developing thoughtful policy and regulation around PFAS and holding responsible parties accountable for PFAS pollution.

New Jersey has, in fact, set the tone for the nation in responding to the risks of PFAS. And we should be so very proud of the environmental professions at the Department who have done this for us. The fact that we had 76 non-compliant water systems with our PFAS standard is not a stain on our state's reputation; just like having the most superfund sites in the country is not a stain. Because we have -- the reason that we have that multitude of non-compliant systems is because we had a standard at all. Because we did the science, we did the hard work, we ground truthed the

issues, and we know that our residents -- that our communities -- deserve better protection from this emerging chemical.

So I'll share just a few brief points, the timeline of our response, and highlight some of the actions that your DEP team is taking to address the problem. And I'm not going to read my testimony to you, I will just hit a few highlights.

In the first instance, what is PFAS, right? It's a class of chemicals, it's not one chemical. Synthetic, man-made chemicals that have been used for decades in the manufacture of products that we need and/or like; not intentional midnight dumping, not something that some nefarious corporate entity went to do wrong. But in the development of products -- and specialty chemical products in particular, for fabric treatments, or non-stick coatings, or fire retardants -- in these types of materials, PFAS chemicals are integrated to achieve a certain property. And I don't know if your grandmother was anything like mine; she sprayed that Scotch Guard all over the place, and then put the plastic over it -- because, you know.

But unlike other chemicals, these synthetic chemicals are extremely persistent in the environment. They don't break down very easily -- unlike petroleum, for example. If you have an oil spill, the environment, while not a great receptor for an oil spill, can naturally function to break it down. That is less so the case with these chemicals. And they bio-accumulate and are toxic, and that means they build up in our bodies, in our blood, in fish tissue. And they circulate widely through our environment, in part because they easily dissolve in water. So these chemicals are, basically, everywhere -- likely in the blood serum of everyone sitting in this room today.

So the question is, what do we do about that? These chemicals, you may hear them referred to as *forever chemicals* because they have these properties that don't break down so easily. You may hear them spoken of as *contaminants of emerging concern*, or *emerging contaminants*, and effectively that means chemicals that we're just catching up to; that we're beginning to pose a concern, but which environmental regulators kind of lag in managing. And that's not a pejorative statement against any environmental regulator -- I am one. But because the nature of our environmental legal and regulatory system is necessarily reactive, we wait for the problem, always. That is the way environmental law was built, and it's the way it still functions, and it needs to change.

So DEP, roughly two decades ago, started trying to get a sense of the breadth of this emerging issue. In 2006 and 2009, we conducted the first statewide study to evaluate the presence of PFAS, and as a result of that work we developed drinking water guidance -- right? Not regulation. Then between 2013 and 2015, the Federal Government required certain water systems, including in New Jersey, to sample for certain PFAS. And we found something really surprising. That New Jersey has a higher percentage of PFAS contamination than most other states. Specifically, our occurrence of PFOA-- I'm not going to try and pronounce these guys out for you -- PFOA. So PFAS is the class of chemicals; PFOA is one such chemical. Our PFOA? Five times higher than others. PFOS, two times higher. PFNA, ten times higher.

And that's -- those higher results are, in part, a function owing to our state's history of manufacturing PFOS in New Jersey, particularly in the

southern half of the state; and/or we're using PFAS compounds and creating other compounds in sort of a specialty chemical application.

So exposure to PFAS in drinking water -- which is one of the things that we're really here to talk about today -- at even low levels it can be higher than exposure from other common sources of PFAS. This stuff is integrated into clothing, into other fabrics, into food wrappers; it is everywhere. But the risk from ingestion is higher, and these are long-chain compounds, they -- the PFOA, PFOS, PFNA -- have long human half-lives, the amount of time it takes for the body to excrete the compound. That's why it persists for so long.

And they pose considerable human health risks. There are some people who dispute that notion, but like I said during our climate hearing in the Senate, it's just science. PFAS can be transferred, for example, from the breast milk of a nursing mother to a child. And there are risks both to our health from the perspective of non-cancer risks, and there are cancer risks as well. PFOA is the most studied of these compounds in terms of its health impacts, and so some of those impacts are increased cholesterol, increase in cholesterol and liver enzymes, certain acids; decreased antibody response -- decreased antibody response following vaccination, for example. And there are health effects that particularly are of concern to younger populations, because infants and children are more susceptible. Although it doesn't function like lead, where we know overwhelmingly the science shows us that childrens' exposure to lead is a far greater concern.

But we're talking about chemicals that build up in the body over time, increasing the risk for infectious disease, for example. On the cancer side, both PFOA and PFAS have been found to create tumors in laboratory

rodents. PFNA hasn't been tested for that. And there is an increased risk of kidney cancer in the general population. There are a number of other things that I'm forgetting that Katie maybe will want to pipe in at some point and add.

But at the end of the day, it's bad stuff. We've got to get it out of our water and away from our kids, out of our environment. And, again, it is all over the place.

So what we worked to do, following that 2013 to 2015 period, was to go about the work of setting standards for these chemicals. Because like I had said, the environmental legal and regulatory framework that we exist in is necessarily reactive -- we see a problem, we explore the problem, and we then work to establish a standard that will help diminish the problem. And so we worked to establish a standard for drinking water, doing a study with our Drinking Water Quality Institute -- a very unique organization to New Jersey that we are very, very fortunate to have -- the creation of the Legislature upon its enactment of the Safe Drinking Water Act, the State Drinking Water Act. So, thank you.

And so we worked to establish what are called *maximum contaminant levels* -- water standards for these chemicals based on their health impacts. We were, as of 2018, the first state in the country to establish a drinking water standard for, first, PFNA, and then in 2020 we followed that with PFOA and PFOS. So the standards are in the parts per trillion -- and I won't bother you with the numbers, but all of that is in my testimony. And what this does -- the setting of the standard begins the process where water systems that serve the public and those that are smaller, that we wouldn't think of as our municipal water system -- or a big water company like New

Jersey American, who is here today with us -- these water systems have to begin testing for these chemicals. They started that in 2019 -- I'm sorry, 2020, with PFNA.

Then last year, they followed on with testing for PFOS and PFOA. And the way water testing works is that ultimately that data is reported to the DEP, we assess its quality, and then we determine whether there is a violation of that standard. And so in the beginning of this year, because the testing for the full suite of these contaminants occurred last year, we were able to assess the data and determine which systems had violations. And that, Chairman, resulted in the numbers of violations or non-compliance that you see.

And when a public drinking water system -- that are now required to conduct this routine analysis -- when they test for this contaminant, they test before the water goes into the distribution system. It's very different than lead. I make that comparison because of how much attention lead, as a contaminant in drinking water, has received; it's a different form of analysis. And once the violation is determined, the water systems must provide public notice -- or perhaps some of your constituents have received notices that they have PFAS in their systems -- and then they have to do that within a certain period of time. And then systems have one year to come into compliance.

So what does that mean? It means that there are ways to get the PFAS out. They are often very expensive, and it can take a bunch of different forms. There could be a water system that is drawing, for example, its source water from the ground, from groundwater wells. And maybe there's a contaminated groundwater issue that is resulting in these exceedances. And so maybe the water system will try to switch sources, maybe move to surface

water instead of the groundwater, to pull the source water that is then cleaned for distribution. But the water systems have this one-year period to get themselves into compliance. And that means examining the root of the issue, working to design treatment that could be put in place to remove the contaminants, and ultimately constructing that treatment -- at, again, considerable cost.

And in some cases, there will be temporary measures. Some of the questions we get is, "Well, they have a year, should I be drinking this water?" A very warranted question. What we do at the DEP is to work with the water systems in order to get them into compliance, to ensure their public notice and their risk communication is appropriate; and risk communication is hard. And we will go through the process of reviewing treatment design with the water systems. If there's an ability to do a shorter term interim treatment, we'll work with the water systems on that.

So currently, right now, the Department has reviewed approximately two dozen applications for treatment, and has been in contact with other water systems that are designing their treatment. And again, that's for 76 -- there are 76 systems that have this violation.

Now, what's also important to note is that not every New Jerseyans gets their water from a water system. Some pull water from their own private well. About 13 percent of New Jerseyans receive their water from a private well, and they're not getting any notices. There's no testing being conducted for them. There is, in New Jersey, the Private Well Testing Act, that requires if you are selling a home, for example, you test your water before that sale. What we are doing now is to have adopted these standards into the Private Well Testing Act so that that now can occur. And, in addition to

other parameters, besides that kind of sale, every five years for rental units -- and that's as of December of last year. And when the private well owner gets a sample that shows there's a violation, notification is made to the county health agency.

Now, in some instances, there are private homeowners that are in the area of a known PFAS contamination hotspot, so to speak. And to the extent that that is something that comes to the Department -- because we know there's a cleanup issue to be reviewed in that area -- we will work with responsible parties in order to get residents onto public systems. But it's not as though we need point-of-entry systems to help clean that water. But it's not as though there is a broad sampling endeavor for this 13 percent of the population.

As I mentioned a few times, the cost to remedy this is expensive. And I think about this a lot. I am an environmental infrastructure enthusiast, perhaps. Water infrastructure, not unlike storm water infrastructure or our issues with flooding -- it's not something that we think about. We turn on the tap, we expect the water to be clean; we're very upset when it's not. There's not a lot of knowledge about, or engagement in, all that it takes to bring that clean water to your tap; or on the reverse side, to take away the stuff that you don't want and treat it in a way that doesn't cause a problem when it gets discharged into a water body. And we think a lot at DEP about water infrastructure, because in addition to being a water regulator, we also are an infrastructure investment. We deploy hundreds of millions of dollars every year for water infrastructure.

So for water systems that are concerned that there's this blooming cost -- a cost that is ultimately going to be passed onto the public

-- for water systems that are concerned about that, that may have no other choice but to raise rates on their residents, on their customers, on their taxpayer, we are here to help. That is part of our job. The overall cost of work that our water systems need to get this stuff out is prolific -- it's as prolific as the contamination itself. But through this program, what is called *The Water Bank*, the program that we run at DEP in partnership with the New Jersey Infrastructure Bank, we're able to work to provide low-cost loans, subgrants, and principle forgiveness to help with design, construction, and implementation of projects that can help not just in this setting, but in every other water need. Our water infrastructure needs in this state are great -- over \$30 billion; \$30 *billion*, with a B.

So I would just encourage all of you to be speaking with your constituents, and municipalities, and utilities in your districts to make sure there is good awareness of this. We are in the process of developing the Water Infrastructure Investment Plan in the coming fiscal year. Ultimately, that materializes in an appropriations bill that would come before the Legislature. We design funding packages to help get this done.

I'll wrap up, but before I do that, just a quick note that water isn't the only place that we find these chemicals. I know that is the reason for our Hearing today, but there are PFAS risks relative to our air, to our soil, to our solid waste industry, because of how integrated these chemicals are into everyday products. So we are in the process of developing a comprehensive PFAS action plan that will identify sources of PFAS in water, waste water, air -- even in fish -- and provide technical financial support to regulated entities, including our many water systems.

And at the same time, we have to recognize something important. That there are folks who are responsible for this. And again, not because of ill-will. But when you create a product that is harmful and you place it into the stream of commerce, there is responsibility to be borne. So in 2019, the Department issued a first-in-the-nation, statewide PFAS directive under the New Jersey Spill Compensation and Control Act, another foundational DEP authority, to seek important technical information, and cleanup action, and compensation from the largest manufacturers and users of PFAS in New Jersey, including companies like 3M, and DuPont, and Chemours, and Solvent.

And despite numerous, and in some cases years-long, attempts by DEP to work with these companies to resolve PFAS contamination, a full and amicable resolution of that was elusive for lots of reasons. This is a problem all around the country -- all around the world. But because we were not able to reach that amicable resolution working with the Attorney General, the Department ultimately filed litigation against these companies to hold them accountable for the damage that's been done to our environment, to address the public health threat that's been created, and the costs that are effectively transferred to the people.

And this is a really important point, because it is the story of our environmental experience in this country. That ultimately, someone always pays. Whether it is because we didn't design the stormwater system well enough to deal with that flood water; whether it is because we thought, "Well, better living through chemistry," until it isn't; or because we didn't invest enough in managing our landfills, someone always pays for that. That

someone is always the public. The failure to invest in our environment is akin to profligate deficit spending that taxpayers must shoulder.

So in conclusion, I want to thank you again, Chairman, and to the Vice Chairman, for inviting us; and to all members of the Committee for your time, for your attention to how important this issue is. PFAS pose a significant risk to public health, to public safety, to the environment. The cleanup of these chemicals carries a tremendous cost. It is a burden; it is a cost burden upon the State. It forces our local governments and our utilities to invest significant capital on contaminant removal; capital that could be well-spent elsewhere on other necessary water infrastructure improvements. And it represents a real affordability problem for residents and ratepayers who will ultimately bear the cost of what is a much-needed cure.

So it is again my pleasure and honor to be invited here by you today. My colleagues and I at DEP stand ready to help this Committee and the broader Legislature to address this challenge for the benefit of the public we serve.

So thank you.

ASSEMBLYMAN KENNEDY: That's great.

Are there any questions from any of the Commissioners?

We'll start with Don.

ASSEMBLYMAN GUARDIAN: Thank you, Commissioner.

Commissioner, I certainly stand behind you with trying to clean up our water supply. I recently saw there was a meeting in Toms River, which was horrendous over the 40 years of pollution that still exists, that you can't find.

I really have two issues today. One is-- And I wanted to thank you for telling me that we actually do have standards for drinking water, for those three categories. My question is, the first part -- I'm not trying to put you on the spot, and you can tell me; I'll -- you'll talk to me after the meeting.

The first one is, as I read about the lead in a number of schools in two communities within Atlantic County, I read about the lead that's there; and then from other people, that the standard that was used does not even meet the State or the Federal standards, and really needs to be reconsidered. Is that something that you can look into, or maybe you can explain it to me? And then I'll ask my second question.

MR. LaTOURETTE: Sure, Assemblyman, thank you for that question.

I don't know the exact circumstances of testing in Atlantic City. I know there was a recent report by some entity -- not DEP -- I haven't had a chance to read that.

But when folks are referring to the fact that there is -- sampling may not meet a standard for lead, what I think folks are pulling at is there is no *safe* level of lead. In the way that water standards are developed, we work to identify a health-based standard, and we evaluate and quantify risk. In the case of PFAS, we look at one in a million cancer risk over periods of years, for example, and many other things that we could get into. The lead standard is set by the Federal government, and it is not based on risk. It is effectively based on cost, the idea being that to get all the lead out is just too expensive. And so that was the assessment made in the '90s, and we've been implementing that ever since.

Now, what we're doing in New Jersey is something a little different. We are creating a New Jersey-specific lead rule that acknowledges there's no safe level of lead, and that even if you replace all lead lines in the state, you're not going to rid yourself of all of the risk -- because it's also in your indoor plumbing, in some instances. But what I had mentioned before about environmental regulation being necessarily reactive -- we wait for there to be this exceedance, and then we act. In the case of lead, we wait for the exceedance, and then we act sometimes. And what we're going to change is to flip the paradigm and not wait for reaction, and to be proactive -- to have every water system, as they're replacing all lead lines, focus first on assessing risk and adjusting for risk -- through things like corrosion control -- without having an exceedance in the first place; because it's the right thing to do.

I don't know if that helps to answer it.

ASSEMBLYMAN GUARDIAN: Thank you.

The second question is just the obvious, I think we can all relate to towns in our district. I'm just going to pick on Ventnor. Small town, on an island--

MR. LaTOURETTE: Why would you want to pick on Ventnor?
(laughter)

ASSEMBLYMAN GUARDIAN: Because the standards that we have for them to replace all the galvanized piping, from the street to the home, would cost the town \$62 million, when they only have a \$30 million a year budget. So just for how to calculate it, \$62 million over 30 years, at a real low interest rate, is \$600 additional taxes per home, per year, for the next 30 years.

Is there some funding to help these small towns? Because they certainly want to cooperate, they want to remove the galvanized lead piping there. But how does that become realistic with the tight financial concerns that we all have?

MR. LaTOURETTE: It's a great question, it is one that we can help with.

Yes, that is a big sum. The cost to deal with lead in New Jersey is between \$2 and \$4 billion statewide; that's the cost that we project for dealing with removal of all lead service lines in the state. That is highly dependent upon the identification of lead service lines, because we don't know where they all are; there is some projection that goes into that.

To put that in context, the Bipartisan Infrastructure Law on the Federal level -- which we are also very happy about, we are working right now to program that money -- the Bipartisan Infrastructure Law contains \$7 billion for lead service line replacement for the entire country. And so what we have to do, and something we're good at, is to look at how we take existing State appropriations for water infrastructure -- that the Legislature has continued giving us, thank you -- we partner that with Federal Capitalization Grants, we bring in loan repayments for previous loans issued by DEP, and we're able to take those dollars and put them in a really, really, really low interest rate; or have some principal forgiveness, like free money.

And then we also pull dollars from the private market through the infrastructure banking. We package that all together and it drives the interest rate overall to the floor. So I would think that the numbers you gave, they're not -- those numbers aren't put together with that in mind. And so any water utility that has a lead concern or a water infrastructure concern,

you just want to increase the pressure. Come to the Water Bank and apply; apply today. And there's not enough -- there could be more use of it. There's also not enough money, and that's a separate issue that we can all talk about, but the assistance is there.

And priority goes to those who are ready. Get a plan ready and we will help you get funding.

ASSEMBLYMAN GUARDIAN: Commissioner, thank you.
Chairman, thank you.

ASSEMBLYMAN KENNEDY: Any other questions?

ASSEMBLYMAN SCHARFENBERGER: First of all, thank you very much, Commissioner. This has been really an education. And coincidentally, I just had a tour of a New Jersey American and Water facility yesterday in Neptune Township, so I'm sort of in purification mode still.

And you know, interesting what you said, that it's going to cost a lot for those companies to be able to institute, I guess, purification systems. Is it a brand new system, or do they upgrade the existing system to be able to capture PFAS that are not being captured now?

MR. LaTOURETTE: It is different. It's an addition to treatment for existing-- How do I put this, I'm trying to find the right way to say this that won't butcher it.

So when a water system is collecting its source water, it's going to remove a number -- it collects its source water, it removes a number of bad things through certain means, right? Those means do not often include the means that remove PFAS. The most effective treatment for PFAS is granular activated carbon. Think of a Brita filter, what a Brita filter is made of, except

make it the size of a warehouse. So that is not the typical way that all water systems will -- not all water systems need granular activated carbon.

So it does become an additional cost, yes.

ASSEMBLYMAN SCHARFENBERGER: And would you be able to retrofit existing purification systems to be able to capture PFAS?

MR. LaTOURETTE: In some instances, yes.

I know that New Jersey American is here, Matt Csik is here, to offer some testimony, and they have been -- New Jersey American has been ahead of the curve on a lot of these issues. I, too, got a tour of one of their plants recently up in the Short Hills area. So I'm sure that he can speak to the different needs based on what a system has at its baseline.

ASSEMBLYMAN SCHARFENBERGER: Okay, and just one quick question about, not purification systems, but-- I know lithium ion batteries are very heavily dependent on PFAS. Now, if we want to abide by or come into compliance with the master plan, how would we do that without PFAS?

MR. LaTOURETTE: So most PFAS -- so there are replacement compounds for most of the PFAS of concern here. But there are more than 5,000 different compounds that are a PFA. So I'm not sure about the one that you're specifically speaking to.

What I would say is that there's always an alternative. Pursuing one environmental imperative doesn't foreclose our ability to achieve another. That is often something that is kind of thrown about as a -- I don't know, as a reason for inaction. Because all of this is expensive, and somebody is responsible, it's a big bill.

I would not put too much stock in that.

ASSEMBLYMAN SCHARFENBERGER: Thank you very much.

Thank you, Mr. Chairman.

ASSEMBLYMAN KENNEDY: Chairman.

ASSEMBLYMAN STANLEY: Commissioner, thank you for enlightening us today. As usual, you always look dapper; GQ.

Just a few questions, sir. I was reading through your notes here. The financial aspect of it -- that's what I'm looking at right now -- do you have any numbers, is there any infrastructure in place right now that's been already in place, constructed, being used right now?

MR. LaTOURETTE: Yes.

ASSEMBLYMAN STANLEY: What is the cost factor of actually building a project vs. contamination cleanups?

MR. LaTOURETTE: Say that again. The cost of building the project vs.--

ASSEMBLYMAN STANLEY: Versus if you're going in cleaning up a site; cleaning up contamination.

MR. LaTOURETTE: So I'm not sure that's the right comparison -- right -- because this stuff is everywhere. It's not as though this is an oil spill where the oil is in a particular place. In some instances that's the case -- there are a number of manufacturing facilities or former manufacturing facilities that are PFAS hotspots.

But because of the nature of the contaminant and how it has circulated throughout our environment, it's not as though we can go to one place and clean it up. The question now is, how do we address it where it is -- in all the places that it is -- so that it's not causing harm to people or

ecological resources, right? So I don't think you can make that kind of a cross comparison. But to put in context, like what might a cost be, I believe that Middlesex Water Company, -- that has had a violation that's been very much in the press -- I believe that their treatment cost, at least one estimate I saw, was around \$30 million for treating that issue. Don't hold me to it, we can get back to you. But it's significant, it's significant.

Statewide, the issue to remedy for PFAS in drinking water alone -- just drinking water, because this stuff also goes out the end of the waste water; all water is connected. So the water we flush ends up getting cleaned to some degree and put into a waterway; that same waterway may be a place where we pull out water for drinking. So if you're not paying when you're putting -- if you're not paying for treatment when you're putting it out into the waterway, you're just going to pay for treatment when you pull it in to drink it.

Again, a lot of this is just cost transfer, to mostly the public. And so on the drinking water-only side, we estimate somewhere between \$500 million and \$1 billion, statewide.

ASSEMBLYMAN STANLEY: Okay.

Just two more questions. I was reading on the thing here about all the different types of cancers and all the health effects here. How long a duration of exposure, ingestion of the water, would it take -- is there any kind of study on that?

MR. LaTOURETTE: There are a lot of risk assessment studies. I mentioned how complicated risk communication is. There is not a black and white answer to your question because risk is dependent upon multiple sources of exposure.

It's unlikely the case that drinking water is the only place that you are exposed to PFAS. So if you don't know what an individual person's other routes of exposure are, you can't say with confidence, "It's okay if you drink this for another year." You can't say that with confidence. But at the same time, it is different, in kind, to -- say sometimes you might get a boil water advisory, because there's been a water main break and pathogens might have entered the water. This is very different than that, where you would say, "No, don't drink that water right this second because the risk is so acute." This is more chronic, but there can be acute exposure too, so it ends up being a really unsatisfying answer for the mother who just wants to know, "Should I feed this to my kids?"

I think that an answer I am comforted by is if you're using an NSF-certified filter for your water, that is a good thing. But it is very complicated.

ASSEMBLYMAN STANLEY: Follow-up on the filters: I read here "NFS-certified filters." Is there anywhere on the website that residents can look up all this information and can see which ones to buy?

MR. LaTOURETTE: Yes. There is advice and guidance on DEP's website. You just go to nj.gov/dep/pfas.

ASSEMBLYMAN STANLEY: And also, will the residents be able to look up their particular towns or counties, as to the levels of the PFAS?

MR. LaTOURETTE: So, in my testimony you'll see a link to what is called *Drinking Water Watch*, which is a website that includes all of the drinking water results that are submitted into DEP and quality assured. That is one place. It can be clunky to use, we're working on improving it, but the information is available.

ASSEMBLYMAN STANLEY: Great.

Thank you so much.

ASSEMBLYWOMAN HAIDER: Jim?

ASSEMBLYMAN KENNEDY: Yes.

ASSEMBLYWOMAN HAIDER: Thank you, Commissioner, for your testimony.

My question is, you mentioned that PFAS -- you're trying to remove them from everyday household use, materials. Is there any movement for manufacturers to replace with safer stuff?

MR. LaTOURETTE: Yes.

So there already have been replacements of some of these compounds -- not all of them -- and manufacturers are looking at safer alternatives. For example, one of the things that this stuff is in is in firefighting foam. So the military, for example, is looking at aqueous firefighting foam to have replacements in that material that don't contain PFAS, as one example.

ASSEMBLYWOMAN HAIDER: So somewhere in the far distant future we can look to PFAS no longer being in use?

MR. LaTOURETTE: No longer in use? Yes. No longer dealing with it? Probably not.

Asbestos. I will remark upon how asbestos is still an issue and ailing many people, despite the fact that we have not used it in a long, long, long time.

ASSEMBLYWOMAN HAIDER: Thank you.

MR. LATOURETTE: You're welcome.

ASSEMBLYMAN KENNEDY: Well thank you, Commissioner. That is very informative, and we appreciated your comments.

MR. LaTOURETTE: I appreciate the invitation.

Thank you very much. Our door is always open.

ASSEMBLYMAN KENNEDY: Thank you.

Next we have Dr. Laumbach from Rutgers School of Public Health.

R O B E R T J. L A U M B A C H, M.D., M.P.H.: Good afternoon, Chairman Kennedy and members of the Committee.

My name is Rob Laumbach; I'm a Physician and an Environmental Health Scientist at Rutgers School of Public Health, and also at the Environmental and Occupational Health Sciences Institute in Piscataway.

I am about to speak to you this afternoon about the health defects of PFAS in a little more depth. And I think one way to frame that would be to talk about a study that I'm leading down in Paulsboro, which is one of eight studies across the country, which is part of a multi-site study that's being funded by the CDC and the ATSDR to further evaluate and learn more about the health defects of PFAS chemicals, especially in drinking water.

So the project that I'm leading down in Paulsboro is focused on one of these PFAS compounds -- PFNA, perfluorononanoic acid. And the distinction there is that it has nine carbons in the atom, which makes it a long chain PFAS. So the other main legacy compounds, the ones that have been in production for quite a while and actually have generally been phased out since at least 2015, which are, as Commissioner LaTourette mentioned,

PFOA, PFOS -- not to be confused with PFA -- and then PFHXS, which is a six carbon molecule.

But those, as well as PFNA, have been really phased out of production voluntarily in the United States since about 2015. Yet as it has been mentioned, these are legacy compounds that are going to be with us for quite some time, and down in Paulsboro they had the highest levels of PFNA in drinking water that's ever been measured in the world, unfortunately, due to a local source, a local industrial source.

So these longer, what are called *longer chain*, PFAS -- and PFNA, nine carbons; PFOA, PFAS, eight carbons -- they bioaccumulate in the body more than some of the shorter chain PFAS compounds, and then can reach really high levels relative to what's in the water. Like, for PFNA, the levels in blood are a hundredfold or more what's in water, according to the best estimates that we have.

So down in Paulsboro, the local source down there -- at least one source of PFNA locally in the industry actually phased out their use of PFNAS in 2010. Yet in a study that we did a few years ago measuring PFNA or looking at PFNA in peoples' blood in Paulsboro, it was at four times the national average. Mr. LaTourette mentioned PFNA across the state being like 10 times the national average. So down in Paulsboro, mainly due to the drinking water -- it was found in the well.

And Commissioner LaTourette mentioned a number of different health defects. And there's really a whole litany of health defects, which I won't repeat some of them. Basically it's almost every organ system in the body -- the immune system, the kidneys, the liver, reproductive system, and then also a couple types of cancer that either animal studies or human studies

have linked to PFAS compounds. But we don't know a lot about what levels of PFAS cause these different types of health outcomes, so we need to learn more about that.

Like any good scientist, I always say we need more study, of course. But really in this case, we really do. And even though these compounds have been in production since the 1940s, as Mr. LaTourette mentioned, they are emerging compounds and we're still catching up. And here, we're just catching up really with these four main compounds, which are already out of commerce and have been replaced by other compounds, many of which aren't non-PFAS, they're other versions of PFAS. And they generally tend to be the shorter chain, which we think because it doesn't stay in the body as long it's not as harmful. One of the-- We're sort of guessing in some ways about the harms and what levels of harm there are for different PFAS compounds.

But we know that it bioaccumulates in the body, and it's hundreds of times what it is in the environment, because our bodies are essentially capturing it and holding it in our bodies; our kidneys tend to retain these compounds, so they tend to build up in our body. So that's got to be worse than those that are short chain, that we essentially pee them out when we have to readjust them. But if you have continuous exposure to these short chains, they can still be harmful as well.

So these big four compounds, they've already been phased out, and we're still catching up with them as to what the health defects are. But it's important to do that, and so this study that I'm engaged with right now across the country, eight different sites, California, Colorado -- it's not just a New Jersey problem -- Massachusetts, Michigan, Pennsylvania across the

river; New Hampshire is another site. We're combining these studies together to have a larger study to look at measuring the PFAS levels in peoples' blood today.

Even though, like in Paulsboro, the well was shut down in 2014, the water has been cleaned with one of those big Brita filters since 2016, but levels in peoples' blood are still elevated. Just a couple years ago, again: Four times the national average in Paulsboro, half-life being something around the area of five years; so every five years it goes down by half. That means 10 years later it's still a quarter, right; it went from five years to a half and another five years to 25 percent. Five years from now it will be 12.5 percent.

So we're looking at the levels in blood in Paulsboro, and then learning more about peoples' health through a questionnaire and some things that we can measure in blood also, with the same blood sample that we take for the study; and then reconstructing peoples' past exposure. And we're focused on Paulsboro, again, because of the high levels of PFNA in the water there, and because we know that it was at least a pretty much homogenous system where it's the town's water supply. Everyone -- if they drank the water, they drank water from the same system, and we had measurements going back to at least 2012 with the water.

So we're trying to understand better what these health defects are. But again, just emphasize that this -- we're focused in Paulsboro on one compound, and the overall national study is focused on several of these legacy compounds, and then a few others that will be measured too. But we're exposed to many different PFAS from many different sources, and so we're just trying to get a handle on what's happening with the single compounds. And I'm sure you're all aware of the issue of multiple exposures, and the

cumulative impacts of multiple exposures, so we're not anywhere near getting to that point.

But there's enough concern, again, based on-- I gave the Committee a couple of articles, that are review articles, that go through some of these health defects. Mr. LaTourette mentioned non-cancer as well as cancer effects. There's enough, certainly, that we know to take action. And we want to prevent the health defects in human beings, so part of the issue we have with PFAS compounds is that a lot of the research is on animals and relatively little on human beings.

But we don't want to get to that point where we're measuring cancer and other health defects in human beings. It's enough that we know, and generally we recognize -- we regulate compounds based on animal toxicology. Because we don't want to have the experience of people being exposed to industrial chemicals and having health defects.

So my main message is that even though we're uncertain about the health defects; even though there's a lot more to be learned, that we do know enough to act. But we still need to learn more, because these compounds are going to be with us for a long time in the future, as was mentioned earlier.

ASSEMBLYMAN KENNEDY: Thank you, thank you very much.

Any questions for -- yes, I'm sorry.

ASSEMBLYMAN GUARDIAN: Thank you, Mr. Chairman.

If you can help me, Doctor; the possibility of-- I guess it's sequestration of the PFAS as an alternate disposal of these forever compounds?

DR. LAUMBACH: That's a good question, I think -- that's not really my area of expertise.

When you first started saying sequestration I was thinking, well, to some extent they're actually sequestered in our bodies because they tend to get absorbed and then retained in the body. But I think you mean -- I know you mean the treatment, and that's not my area of expertise.

ASSEMBLYMAN GUARDIAN: Thank you.

ASSEMBLYMAN SCHARFENBERGER: Just one -- Chair, quick question.

You had mentioned that newer compounds don't stay in the body as long as PFAS?

DR. LAUMBACH: Well, shorter chain compounds in general.

See, these legacy compounds -- like PFNA is nine carbons long; like in a chain, they're all linked together in a chain. Whereas there are shorter chains that don't get retained in the body, in the human body, like the longer chains.

And there are other complex-- Again, within 5,000 different PFAS compounds that have different branches, not all of them are chains, but a general principle is that there's been replacement of the longer chains with shorter chains, thinking again they should be better because they don't get retained in the body. But at the same time, they could still be harmful if you have continuous exposure to them, even if they're not retained in the body.

ASSEMBLYMAN SCHARFENBERGER: Okay, so that means they still accumulate over time, even though they're in the body for a shorter period?

DR. LAUMBACH: Right, they'll still accumulate in the environment because they have this carbon fluorine bond. It doesn't break down in the environment, so it will certainly accumulate in the environment. They won't accumulate in our bodies, meaning that the blood level and the level inside our bodies sort of grows over time, because our bodies are retaining the longer chain ones. But the shorter chains, as you consume it, as otherwise you ingest it, or get exposed to it by air by breathing -- it would be leaving the body as it gets ingested, or taken into the body.

ASSEMBLYMAN KENNEDY: Are there any other questions?

(no response)

Thank you for your testimony.

DR. LAUMBACH: You are welcome.

Thank you.

ASSEMBLYMAN KENNEDY: Next, from the Audubon Society we have Dr. Eileen Murphy.

EILEEN MURPHY, Ph.D.: Good afternoon, Chairman Kennedy, and members of the Assembly Environment and Solid Waste Committee.

I am Dr. Eileen Murphy, Vice President of Government Relations at New Jersey Audubon, but I was also previously the Director of the Science Division of New Jersey DEP, where I conducted research on contamination of drinking water, including PFAS. I conducted some of the studies that you heard about today. I did that for 21 years before coming to New Jersey Audubon. I also served for six years as a charter member of the U.S. EPA Science Advisory Board, where I provided expert advice to the agency on issues such as chemical contamination. So I appreciate the opportunity today to come and testify on PFAS.

Addressing PFAS in New Jersey is critical; you've heard that already. And you've heard from other presenters and in written testimony about what they are, so I'll just emphasize that they're ubiquitous, they're in the environment, and they have adverse health effects -- not only to humans, but to wildlife. And incidentally, because I'm New Jersey Audubon, I need to point out that the data on wildlife is appallingly lacking. What little does exist does show impacts, negative impacts, and particularly to birds. But research today is just really focused on humans and human health effects, but we do need to do more to assess impacts to wildlife.

But today is about water. According to the U.S. EPA dataset of chemicals called *Comptox*, there are over 10,000 individual PFAS in existence. When I checked this morning, it was at 12,039. As our methods for detecting these chemicals improves, and as they continue to be used commercially as they are, this number will grow. Regulatory attention has focused on human exposures in drinking water. States and the Federal government have developed non-enforceable health advisories, but also legally enforceable maximum contaminant levels, MCLs, for some PFAS.

But the process of reviewing the necessary information for standard development is arduous and extremely lengthy. Information on occurrence, toxicity, analytical methods, and treatment capabilities are needed for each individual chemical in order to develop an MCL. New Jersey began the process of developing these health advisories in order to inform MCL development in 2004, when the State first detected PFAS substances in water in South Jersey. But it wasn't until 2018 that the State adopted an MCL -- the first ever in the country, I will agree -- for PFNA; and shortly after that, for two more: PFOA and PFOS. There are no Federal drinking water

standards for any PFAS, although some states are regulating them now. They do have health advisories for PFOA and PFOS.

Both of those compounds are not in use anymore, they were phased out in 2015, as you heard. And incidentally, levels of those two -- PFOA, PFOS -- have decreased significantly in water and in human blood over time, so that's actually very good news. Unfortunately, other PFAS are increasing in occurrence because we're using different ones. Of the thousands of PFAS known to be in the environment -- 12,039, in case you missed it -- we regulate three in New Jersey, and it took 16 years to regulate those three. Our current regulatory approach for developing MCLs in drinking water is chemical-specific, one chemical at a time. And this is scientifically valid. But the approach is inadequate for the sheer volume of these chemicals that we're seeing in the environment.

When we first learned of the occurrence of PFAS in 2004, we thought that this very small handful -- we only saw about three of them at the time -- was unique. These were the emerging contaminants of the day, and that it was unusual. But each year, new studies have identified hundreds, and now we're in the thousands of PFAS. As we find more in this class, it just causes one to wonder about what are emerging contaminants -- 2004, that's a long time ago. Referring back to that U.S. EPA Comptox database, there are over 900,000 chemicals in the environment that need evaluation of some sort. For perspective, there are drinking water standards -- MCLs -- for 90 substances.

So PFAS actually represents the challenge we face in regulating all emerging contaminants in general. We can't rely solely on the chemical-by-chemical regulatory scheme anymore, especially when so many of these

chemicals have little or no toxicity information. Sixteen years to develop three MCLs out of a list of 12,000 is inadequate. We really must develop multi-pronged solutions; we have to think outside the box, including restricting the use of toxic chemicals, developing safer alternatives, developing innovative remediation technologies to clean up contaminated sites, and, indeed, treating drinking water for a wide suite of potential contaminants -- perhaps using a treatment-based approach or a class-based regulatory approach.

These actions won't replace the current regulatory paradigm of one chemical at a time, but it could compliment it and it could accelerate our protections for the public -- and not just for PFAS, but for other currently unidentified emergent contaminants that we just haven't discovered yet. We already have treatment-based MCLs for some contaminants, like disinfection byproducts, and we have already set class-based standards for PCBs, dioxins, PAHs, and others. In other words, there's precedent for looking at new ways of regulating contaminants in drinking water. So the question is, is there a will to do it?

So thank you for this opportunity, and I am happy to answer any questions.

ASSEMBLYMAN KENNEDY: Any questions? (no response)

Seeing none, thank you very much.

Next we have Tracy Carluccio from Delaware Riverkeeper Network.

TRACY CARLUCCIO: Thank you, Chairman Kennedy, and Vice Chair Stanley. Thank you, Committee, for inviting Delaware Riverkeeper Network to testify here today.

So as not to repeat, I would just like to say that the most important thing that New Jersey has done is the adoption of maximum contaminant levels for PFAS compounds. They were early to do it; it still took a long time from the time the issue first emerged. But they were early to do it, being the first State to adopt any PFAS compound -- or PFNA. And that's important because it stopped the exposure of people to the source of drinking water that's contaminated.

But also, coupled with that is the cleanup effort on the part of the State. And of course, it involves the Attorney General's office suing the corporate responsible parties; the Department is suing the Department of Defense, working through the (indiscernible) Program to clean up contaminated sites. It is a broad and a very uphill battle.

But there are things that can be done now that don't cost a lot of money, and that will stop the spread of PFAS compounds. One of the questions that you had asked is, how does it get into the environment? Well, one of the ways it gets into the environment is through sewage treatment plants, and industrial treatment plants, and landfills, and basically leeching from sites through groundwater and surface water.

And, for instance, one of the things that we could do is stop the spreading of sewage sludge that contains PFAS -- and we know sewage sludge does -- on farm fields and parkland. This is something that the State could put in place, perhaps legislation could put it in place. But as an example of the problem, short-chain PFAS compounds have been found in tomatoes and celery on land that has been contaminated by PFAS sewage sludge or bio-sludge, where applied. Also, in Maine, dairy farmers have been affected and actually had to get rid of their herds because their milk had been

contaminated by their cows grazing on fields that had been spread with so-called biosolids -- sewage sludge.

So we at Delaware Riverkeeper Network think that should be a banned practice until it can be proven that the sewage sludge does not contain PFAS compounds.

The other thing I just want to point out is that the water crisis that's been created by PFAS compounds has caused disturbance here in New Jersey and the other states, as we heard other testifiers say, but it's really a worldwide problem. And people are riddled with worry about what has it done to their bodies and their families' bodies, to the fetus, to the child that's born, because they've been exposed to contaminated water. And I think we just have to keep in mind that these are people that are being affected. And I understand the issues related to how much it costs to clean it up, but what is the cost of a healthy child? What is the cost of having the confidence that you can breastfeed your child and not be making them sick?

Developmental problems are associated with the exposure to PFAS. It even travels through the umbilical cord to the fetus. And do we want to have children who are marked for life by a development problem, because their mother or they were exposed as an infant to PFAS in their water? I don't think so.

I would also like to point out that the cleanup of the sources -- going after DuPont and Solvay and 3M is really, really important. And it is expensive, but it's an investment that needs to be made. A lot of states are not doing this, and certainly the Federal government is not doing this. But the scale of the contamination is so enormous that you have to have nerves of steel to carry it through. And I think that kind of resolve on the part of

multiple agencies, such as the Attorney General's office, DEP, our fantastic Department of Health -- these are the agencies that need to come together in a team approach.

The other thing I would just like to bring up here, because a lot of people -- great testimony here today -- covered things. But I really want to emphasize that, most recently, in January of this year, DEP established an interim-specific groundwater quality criteria for chloroperfluoropolyether carboxylates. It's a mouthful. (laughter) And I'm going to call it Solvay's product, for short. It's the first state to do so. Again, charting the way.

But this was made possible because DEP and the EPA scientists performed very difficult forensic analyses to identify and locate this extremely toxic chemical in the environment and in local drinking water around the Solvay facility, which is in Gloucester County. This chemical is Solvay's so-called replacement for PFNA, and this action by the state is the first step, and a unique one, in addressing the issue.

But it turns out, really, this is one of the worst injustices in New Jersey's PFAS story. The PFAS chemical is actually more toxic than the original PFNA that Solvay was supposed to be replacing. It is intolerably ironic that the same people who were exposed to one of the most highly toxic of the PFAS compounds -- you heard from Dr. Laumbach, the highest level in the world of PFNA -- have also been exposed to this newly discovered dangerous contaminant. And it's a so-called replacement, because it turns out, after the fact, we learned that this chemical has been used for decades at that Solvay facility in West Deptford. It slipped through the EPA's bureaucratic cracks; it was allowed due to lax Federal regulations, which are riddled with loopholes to this day. And also because it was hidden from the

public because it should -- because it was shrouded by Solvay calling it a trade secret.

All of these problems are still in place in the way that we deal with PFAS compounds and other unregulated chemicals. EPA has not adopted a new MCL for any chemical since 1996. That's why the states are in this terrible position today, trying to catch up with the chemicals that have been let loose into our environment and residing in our bodies. So, in fact, most of the unjustly burdened, affected public still don't even know about this. The people around there don't know that they're drinking water that could have this Solvay product in it. And with New Jersey's groundwater criteria, certainly, that's groundbreaking. And that's a start and a way to further investigate the problem. And New Jersey is ahead because of that.

But the public's questions are begging for answers. What has this done to my body? What has it done to my family? What about my children, are they going to develop a disease later in life because of this? Did they suffer a developmental problem that we haven't discovered yet? Where is it? Where in New Jersey is this Solvay product found? We don't know. We need a lot more sampling to find out. And it's the same with other replacement compounds, but I really wanted to highlight this one, because it's so egregious. It's just an outrage that the people in that area who are already overburdened by environmental burdens are now subject to being exposed to a compound that's even more toxic than the one it was supposed to replace.

And one last thought. We talk about expense, we talk about clean up, but the polluters should be paying here. That's really the bottom line. And we have a great spill fund in New Jersey, and DEP has used that

spill fund in order to go out and proactively sample, and also to make an early step to putting point-of-entry treatment systems on affected individual wells. But we need a lot more done, and we need a lot more money to do that, and it should come from those who polluted us.

I have submitted documents, and I have a whole raft of things that I could suggest that New Jersey should be doing. But one I really want to focus on, and that is: There needs to be public discussion of the cleanup plans of these polluted sites. The public needs to be involved and they need to know what's going on. Second of all, we really should ban PFAS use in the manufacturing of firefighting foams, and the other places where it's still being used. And yes, the long chain are phased out, but not all of them are, as we've heard. We really should ban their use and all the -- except for absolutely essential uses, which are benefitting the public, obviously. And any that are used need to be handled as hazardous waste, and they're not handled as hazardous waste at the disposal site today.

There are a few other things that I will email you comment, but there are a few other things I think New Jersey could do, and I can answer questions if you want, in order to fill that out.

ASSEMBLYMAN KENNEDY: I appreciate your testimony.

Are there any other questions?

Stanley.

ASSEMBLYMAN STANLEY: Thank you, Tracy, for your testimony. I can hear from your voice the passion that you have for this particular issue.

Can you speak to us as a body -- what are the most common types of sources where we can focus legislation on?

MS. CARLUCCIO: Well, I think wastewater treatment plants, sewage treatment plants, landfills, leachate disposal systems from landfills, manufacturing sites -- any places where they continue to use PFAS compounds, whether they're the replacements or the short chains. Those are a few.

I think one of the problems is that only 214 water systems in New Jersey were tested when they adopted the NCLs, by the time in 2000 they adopted all three. So that means out of the 600-and-some water systems that exist, everybody is just starting to find out if they have a problem. And so one thing that's for sure -- and I do work at the national level on this -- when you test, you're more likely to find it than not, and if you don't test you're never going to find it. And ignorance is not bliss; we really need to do the sampling. And this is why places are emerging now that didn't know they had the problem, -- because it's required, it's fully implemented, and it's required that the sampling be done.

So we really need to look at the sources of contamination for the individual, which is the drinking water systems, but we also have to look at the sources of contamination, and they are diffuse.

And the other thing -- and you talked about this, some of the other testifiers talked about this, but also you asked about it. These are forever chemicals. The reason they're called that is, even though they've been phased out, the major PFAS long chain, PFAS compounds -- they're still in the environment and they're going to stay there basically forever. So it doesn't matter that it was phased out in 2010; and we're finding that what is happening is it's moving.

And sometimes the other problem is that it will move closer to a drinking water source than it was originally, that's why it's important to clean them up.

ASSEMBLYMAN STANLEY: One more question. On the development of -- the developmental problems that children have from this. Do you have any statistics on development problems that children have, from mothers who--

MS. CARLUCCIO: I did send some studies yesterday, so there are several scientific-- There are hundreds of scientific studies today. And there's one in particular that I did send to you on the developmental problems associated with PFAS compounds in the fetus and infants, I did include that. It has to do with head circumference.

ASSEMBLYMAN STANLEY: Thank you.

MS. CARLUCCIO: Thank you.

ASSEMBLYMAN KENNEDY: Thank you for your testimony.

MS. CARLUCCIO: Any other questions?

If you want to continue this conversation about other things we can be doing, I'm very happy to do that. We believe more blood studies should be done, the DuPont facility at Chambers Works used PFOA for years, and other PFOS compounds.

Very important that blood studies, medical monitoring, education of the health professionals all be done in order to get a handle on how this is affecting people who have been exposed, particularly those who have been exposed for decades.

Thank you.

ASSEMBLYMAN KENNEDY: Thank you.

Okay, last but not least, Matthew Csik, from -- the Director of Water Quality in New Jersey American Water.

Matthew.

MATTHEW CSIK: Thank you.

ASSEMBLYMAN KENNEDY: Did I get your last name right?

MR. CSIK: No, but when you have a last name that's spelled like that, you don't get used to getting (indiscernible).

Good afternoon, Mr. Chairman.

ASSEMBLYMAN KENNEDY: How do you pronounce it?

MR. CSIK: It is pronounced *Cheek*, believe it or not.

Members of the Committee, it is my pleasure to be here. My name is Matthew Csik, I am the Director of Water Quality and Environmental Compliance for New Jersey American Water.

First I would like to recognize the Commissioner, who did a wonderful job summarizing a lot of the routes of entry for PFAS and a lot of other basics about PFAS chemicals.

I think what I'm here to do today is to share somewhat of a success story, our success story as New Jersey American, but recognize the challenges across the industry, and that we still face within our company, related to PFAS treatment and protection of public health.

So just as an aside, New Jersey American Water, we have 2.8 million wastewater and/or water customers in the State of New Jersey, so that's roughly one out of every three folks in the state.

PFAS has certainly had a broad impact on utilities. I am happy to tell you we have eight stations that are currently successfully treating PFAS contamination of the groundwater at this time. I'm going to talk a little bit

about our approaches and the industry approaches to treating PFAS. I know that was some of the questions that were raised earlier.

Historically speaking, though, groundwater has always been much cheaper -- we talk about cost -- has been much cheaper to treat than surface water. So systems that get water from rivers, streams, things like that, that water quality is ever-changing and it becomes much more expensive to treat. Groundwater has always been a most cost-effective solution when it was possible. So what PFAS has done -- a large impact in the industry right now -- PFAS has made groundwater treatment far more expensive. In fact, in some instances, groundwater is becoming as expensive to treat as surface water. And we also heard the Commissioner talk about the rising costs, and certainly we are feeling that in New Jersey based on the quality of our groundwater today. PFAS is certainly one of the contributing components to that.

Aside from just cost, is supply. That's another great challenge. I know just in one of our operating regions -- one of our four operating regions in the State of New Jersey -- we've lost over 20 million gallons a day of groundwater supply. It's impacted with PFAS right now. We will, of course, design, build, and treat the appropriate systems so we can deliver that water to our customers, but it is a major concern right now. As we look at resilience and our need to be resilient as an industry and as a utility, we really need to keep the water flowing for our customers. And, you know, losing some of that capacity has a very large impact on our own emergency planning -- what we can and can't do for our neighboring systems, and what we can and can't provide to our customers on any given day, especially when there are emergencies.

So, again, I want to talk a little bit, very briefly -- it's a real challenge, and I've accepted the challenge, to be brief here, Mr. Chairman. It does cut against my nature.

There are, I'll say, four general industry approaches to dealing with PFAS in source water right now. The first we talked about -- it was mentioned earlier -- is activated carbon -- granular activated carbon, the black powdery stuff that comes out of a filter sometimes, even a pitcher filter. It's been an industry standard for a long time. When that's used, I will say it tends to have -- it's effective, but its effectiveness wanes a little faster than some of the more recent alternatives that we have kind of helped to pilot, research, and implement here in the State of New Jersey. So that carbon one- - I know there was a question about other contaminants. And, frankly, activated carbon is the standard for other volatile organic compounds -- your benzines, and things like that. So when you have PFAS in addition to those other compounds it can be a great solution.

More recently, we've transitioned into using anion exchange resin. I won't get into any of the design or nitty gritty with that, but we began piloting, years ago, this anion exchange resin. It's a very specific resin-filled vessel, and it has a very high affinity, a high likelihood of binding to the PFOA, PFOS, and PFNAS that are out there. We find that we're able to use that treatment for much longer before those contaminants start to show that they're breaking through the treatment. So it has been a tremendous benefit to us. It also does reduce the waste stream from these treatments, and we can't ignore the waste stream on the backend of these treatments.

I call us the *vacuum cleaner of PFAS* right now, because water systems out there really do have to treat right now; that is our charge. Of

course we're doing that for public health, but we are the ones that are treating a lot of the PFAS that is in the environment today. The waste stream opens up a whole new avenue of concern, right, for the general public and the environment.

So those are two treatments. Now I'll touch on a third, which is really outside the box. In our central region, we have two stations that were groundwater stations -- they were wells -- and while they blended in our main system water to feed very specific areas, those wells themselves, we found contamination in those wells themselves. So what we've actually done is spend millions of dollars to convert those into booster stations. So now they're pooling nothing but the surface water from our Raritan, Millstone, and Canal Road plans, and pushing them into those zones so there is no detectable PFAS in those zones today.

Again, that's water lost in the ground. We have an allocation permit, we need to use as much water as we can on those allocation permits. So it is a concern. We do plan to revisit them with treatment, eventually.

The fourth alternative -- and this maybe should use air quotes -- we also have a lot of interconnections with neighboring systems. And there are opportunities out there, at times, and when the infrastructure is built in such a way, that systems that are impacted today in delivering water with PFAS can buy -- can purchase water, and move it through an interconnection, and move it from one water system into another. I will say that we've had roughly 8 to 10 municipalities approach us already about buying more water that we can send into those towns.

But again, I will almost revisit that resilience point. There is still a breaking point, there is only so much water to go around, and much

investment and much study has to be done again to make that a really effective solution across the industry. It's very situation-specific. It's not ubiquitous.

Another key message -- and I've heard it, it's been resonated by several presenters today -- an ounce of prevention is worth a pound of cure. I know my mother beat that into my head as well, as it's true. And I think if you follow the dollars when it comes to PFAS contamination and prevalence across New Jersey, the money spent to prevent PFAS from entering our soils, from entering our aquifers, from entering our rivers, lakes, streams, and reservoirs, it certainly does spend -- it certainly does save a lot of dollars down the road in treating things like drinking water.

Because I'll share this: After you've done the design and implementation, and spent tens of millions of dollars to install the appropriate treatment, there's still legacy costs. Of course, that filter media, that stuff in the vessels, that all has to be changed out. There's a tremendous amount of operating expenses that follow just that capital project.

Again, we still continue to try to treat additional groundwater stations. That's our success story so far. I will say, if we look really far forward, probably my biggest concern on behalf of the company is what is the condition in our surface waters. If major source waters like the Delaware River and the Delaware and Raritan Canal, the Passaic River, and others -- we are seeing in some of those water bodies the PFAS compounds trending up. And when I talk about tens of millions of dollars to install treatment on the groundwater facility, that's 10 million gallons or so a day, sometimes less, sometimes slightly more.

That cost is an order of magnitude higher when it comes to a large treatment plant for surface water. And just as an example, our Canal Road and Raritan Millstone treatment plants in Central New Jersey treat and deliver roughly 200 million gallons a day, at times, especially in the summer. Treatment that, you know, costs tens of millions of dollars for 10 million gallons, you can imagine that's going to be a substantially higher cost when it comes to treating hundreds of millions of gallons being delivered from Summit to Princeton in a day. It's a tremendous amount of money that we're talking about to mitigate that risk.

I will say that some of our treatment -- and just to revisit the anion exchange resin treatment systems, a couple of ours have been awarded Governor's Environmental Excellence Award, been recognized with other environmental awards from CIANJ. And really, it's not only the innovativeness -- if that's a word -- of the actual treatment, it's also that reduction on the back end of the waste stream from the effective treatment.

So that, again, I think we have a success story. I recognize, and I hope it comes across, that there's much work to do. Hearing the other speakers, I think it's prudent for the industry to continue to look ahead, not just following what's regulated today. We've stood up our surveillance system that actually monitors and looks for contaminants that may be a concern. We may not even have the health effect information on it today, but my team is out there grabbing samples every day to look for things we don't even know we have to be concerned about yet. And I think that's part of the success, and I see a lot of that in the industry among colleagues as well.

But that's kind of what I think enables a water system or a water company to be really ahead of the curve.

ASSEMBLYMAN KENNEDY: Thank you for your testimony.

Anyone have any questions?

ASSEMBLYMAN McKEON: Chairman, thank you.

I apologize to everybody; I got the short straw when they needed somebody to substitute into a committee where they needed a quorum. But I am interested in this topic and read a lot.

Not that it's exactly off -- but could you explain to me where you're talking about the loss of groundwater? I'm just not sure why that would be the case.

MR. CSIK: Sure.

So the groundwater is still there. When groundwater has been-- When we've been testing it, and it's bound to have PFAS contamination, we're simply turning those wells off. But when we turn those wells off, it has a cascading effect across the system. So it takes a couple years to get treatment online, so in the interim we don't use that groundwater because we certainly don't want to expose our customers to it. So in that interim phase where there's no treatment, we simply shut down the wells. And in the two systems that I mentioned, we completely converted those wells into booster stations. Completely different, they now pull water from the main system and push it out into other areas.

ASSEMBLYMAN McKEON: Could you just repeat the percentage you said, as it relates to how much of that, that you've lost on the basis of having to do so to be environmentally responsible?

MR. CSIK: Sure. So I don't have a percentage across our footprint, but I will say in our largest operating region, our central region, we

have lost between 20 and 25 million gallons a day of production from wells that are, today, offline and will not be turned on because of PFAS.

ASSEMBLYMAN McKEON: And obviously the implication is as it relates to the end user and the cost, as much as the price that has to be paid.

MR. CSIK: Exactly. We're pulling more expensive-to-treat surface water into that neighborhood because we can't run that well.

ASSEMBLYMAN McKEON: And knowing the source of a lot of the PFAS, surface water isn't more of a recipient of that kind of -- I think of the fire foam and a lot of other things, the oil pieces.

MR. CSIK: We've not seen it yet, and it may be a matter of dilution, for the sources that are out there and are discharging into much larger volumes of water, and therefore there could be a dilution effect. I will say several bodies of water are trending up, so those sources are either becoming greater, more persistent, the dilution could be reducing, or simply we have more points of -- point sources or non-point sources of pollution.

The groundwater also, remember, it kind of changes a little slower, it's a little bit more stable. So once it's in that area of an aquifer, it spreads; yes, it moves, but it doesn't do that as quickly -- nearly as quickly as surface water. Picture a river running.

ASSEMBLYMAN McKEON: Sure. Thank you, very knowledgeable.

Thank you, Mr. Chairman.

MR. CSIK: Thank you.

ASSEMBLYMAN KENNEDY: I would like to thank all of our guest speakers today. I think it was very informative and helpful.

That concludes our meeting for the day.

Okay, I'm sorry, we have a resolution here to deal with. AJR38, which designates April 16 as "Upcycling Day," in New Jersey; how could I forget. (laughter)

Registered in favor and wishes to testify, Rashida Saif.

RASHIDA T. SAIF, MD: Good afternoon.

Chair Kennedy, Vice Chair Stanley, and all the Committee members, thank you very much for giving me this opportunity today to testify for the bill for upcycling. Upcycling is a topic very close to my heart.

I am Dr. Rashida Saif, a pediatrician based in East Brunswick. I am also a member of the Dawoodi Bohra Community of New Jersey. The Dawoodi Bohra Community has made taking care of the environmental an integral part of how we practice our faith. We as a community have emphasized the importance of recycling and upcycling. We launched our local chapter, called *Happy Nests*, an upcycling initiative in which we take responsibility of our plastic waste, which we then upcycle with passion.

So in this project, members of our community, from elderly to the youngest children -- we upcycle. So the elderly upcycle planters, they upcycle bird feeders; the little ones made pencil holders, placemats. So basically they took responsibility for their own plastic waste. So just like birds make their nest by repurposing pieces of scraps from their existing environment, the concept of upcycling strives to make the environment of our homes, our communities, and our world healthy and safe for generations to come.

So we hope our small efforts can join our fellow communities, local governments, and other organizations to achieve real, impactful change.

So we are happy to see this bill being introduced today, and we fully support it.

Thank you.

ASSEMBLYMAN KENNEDY: Are there any questions for the speaker? (no response)

DR. SAIF: Thank you.

ASSEMBLYMAN KENNEDY: We have a latecomer to the meeting: Doug O'Malley.

You're on.

DOUG O'MALLEY: Thank you so much, Mr. Chairman. And thank you so much, Mr. Vice Chairman, for introducing this Resolution.

I wanted to thank Rashida, the good doctor who just testified before me.

This is a resolution, but this is actually hugely important, because organizations in the state that are upcycling right now -- to be able to use things that normally would go in the trash and to keep them here -- this is part of a work by this Legislature to create a more circular economy for our waste, to make sure that we actually are thinking about the story of stuff; thinking about where things go when they leave our homes. And oftentimes, they don't just disappear. They end up back in our environment.

And I also wanted you to note that the April 16 designation for Upcycling Day is hugely important, because that's close to Earth Day, right? And Earth Day was created more than 50 years ago for political action and also action on an individual level. And obviously this Resolution encourages action on the individual level, and this Legislature has taken action on the collective level.

On May 4 of this year, the most comprehensive law in the country will go into effect for banning the use of single-use plastics. Which I just want to remind the Legislature, is hugely important, because right now we do have a plastics crisis in this state. We just heard an hour plus of testimony on the impacts of PFAS in our drinking water, and unfortunately right now if you go to any waterway in the state, you will find microplastics -- and not just a little bit. In the Hudson Bay, 166 million plastic particles were found by the New York New Jersey Baykeeper. A scientist at Rutgers tested the Upper Passaic River; they found nearly 3 million plastic particles per kilometer. Same thing in the Lower Passaic, when Montclair State did that. Same thing on the Upper Raritan River, when Raritan Headwaters did an analysis. Same thing down in the Pinelands.

So this is obviously a story of stuff and where it goes, and how we ultimately reduce the use of single use products in the state; and upcycling will be part of that solution.

So thank you again, Mr. Chairman. Thank you Mr. Vice Chairman.

We strongly support this Resolution.

ASSEMBLYMAN KENNEDY: Thank you very much.

We're looking for a motion.

ASSEMBLYWOMAN HAIDER: To move the Resolution?

ASSEMBLYMAN KENNEDY: Yes.

ASSEMBLYWOMAN HAIDER: I move.

ASSEMBLYMAN KENNEDY: Okay, do we have a second?

ASSEMBLYMAN McKEON: Happy to second.

ASSEMBLYMAN KENNEDY: Happy to second, okay.

Take the roll.

MS. CALVO-HAHN: On the motion to release AJR38.

Assemblyman Scharfenberger.

ASSEMBLYMAN SCHARFENBERGER: Yes.

MS. CALVO-HAHN: Assemblywoman McCarthy Patrick.

ASSEMBLYWOMAN McCARTHY PATRICK: Yes.

MS. CALVO-HAHN: Assemblyman Guardian.

ASSEMBLYMAN GUARDIAN: Yes.

MS. CALVO-HAHN: Assemblywoman Haider.

ASSEMBLYWOMAN HAIDER: Yes.

MS. CALVO-HAHN: Assemblyman McKeon.

ASSEMBLYMAN McKEON: Yes. And Dr. Rashida, thanks for what you do. You're a part of the solution, and everybody around you, so I appreciate it.

Yes.

MS. CALVO-HAHN: Vice Chairman Stanley.

ASSEMBLYMAN STANLEY: Before I vote, I just want to say a few words.

A year ago -- close to over a year ago -- I had no idea that upcycling even existed. The Resolution was put up so we can be more aware of what we can do to save our environment, not just today but for future children.

I think it's very important that we educate our residents, our towns, our nation. There is more than one way -- it's not just about recycling -- there's more than one way to save our environment. Because our landfills have been more and more filled; and instead of that, we can repurpose a lot

of the products for other uses. So I want to thank Dr. Saif for introducing me to this. And we have a very beautiful presentation of how different products are made for different existing products that we have.

So I strongly say yes.

Thank you.

MS. CALVO-HAHN: Chairman Kennedy.

ASSEMBLYMAN KENNEDY: Yes.

MS. CALVO-HAHN: Thank you.

The Resolution is released.

ASSEMBLYMAN KENNEDY: Great. That's the best part.

The meeting is adjourned.

Thank you all for coming.

(MEETING CONCLUDED)