

Podcast Transcript: PFAS and Your Health

[Theme music]

Ashley Ahearn (Narrator): You're listening to Environmental Health Chat – a show from the National Institute of Environmental Health Sciences that explores the connections between our health and our world.

I'm Ashley Ahearn.

[Music fades out]

Today we're talking about "forever chemicals." More specifically: a family of compounds that show up in the bodies of 97% of Americans – they're known as PFAS.

Laurel Schaider: It stands for per- and polyfluoroalkyl substances. I'll only say that once during the interview. [laughs]

AA: That's Laurel Schaider. She's a senior scientist at the Silent Spring Institute – an independent nonprofit research organization – where she leads research on PFAS and other chemicals of concern for human health.

PFAS are called "forever chemicals" because they linger in our environment and in our bodies. The carbon-fluorine bonds that make them so useful in so many products also make them hang around long past their useful lives. And there are a lot of them...

LS: It's a class of over 12,000 different compounds. These are widely used in nonstick, stain resistant, waterproof, and grease resistant consumer products. Some of these products have names we recognize but they also show up in a lot of products where we might not expect to find them.

AA: Take microwave popcorn bags, guitar strings, dental floss, rock climbing rope, and firefighting foam used at airports and military training facilities.

So, we come into physical contact with these chemicals all the time, and they can get into our drinking water as well.

The public health implications of this widespread exposure are still emerging, but Schaider has dedicated her career to better understanding them.

LS: Exposures to PFAS have been linked to elevated cholesterol, changes in thyroid hormone levels, changes in liver and kidney function, effects on the metabolism and obesity, suppression of antibody response from routine vaccinations, particularly in children, and in communities with high levels of exposure, there's also evidence of increased cancer risk.

AA: Schaider leads the NIEHS-funded PFAS-REACH Study, which stands for Research, Education, and Action for Community Health. It's a researcher-community partnership that is evaluating PFAS exposures and immune system effects in children in communities with PFAS water contamination.

One of those communities is Hyannis, Massachusetts.

LS: So, Hyannis is located on Cape Cod and people typically, when they think of Cape Cod, think of beautiful beaches and freshwater ponds. And unfortunately, it's also an area where there's been contamination of the public drinking water supply.

AA: Hyannis is the economic hub of the Cape. It's home to an airport and the County Fire Training Academy, where firefighting foam containing PFAS was used.

LS: For these reasons, the Hyannis water system – in the past – was contaminated with PFAS at higher levels than pretty much every other water supply in Massachusetts and in the top 1% of public water supplies across the country.

AA: It's important to note here that she said, "in the past." Hyannis updated its water filtration systems to vastly reduce PFAS levels in the public water supply and Schaidler says they deserve kudos for confronting the problem.

LS: But in the past, there were elevated exposures in the community, and we can learn from those exposures to better understand how PFAS chemicals can affect our health. And so, our study is aiming to recruit young children who may have been exposed and we're particularly focused on understanding immune system effects.

AA: Schaidler and her colleagues are collaborating with researchers at Michigan State University and Northeastern University, as well community partners – the Massachusetts Breast Cancer Coalition and Testing for Pease. They are gathering data from 120 children in Hyannis and Portsmouth, New Hampshire at the site of the former Pease Airforce Base – another PFAS hotspot.

LS: Families who take part in the study will have their children provide a blood sample and a urine sample. And we also have a questionnaire to find out about where in particular where the children's mothers lived and worked over time to give us some sense of their exposure from drinking water and potentially other sources.

AA: One of the goals of the PFAS-REACH study is to better understand how exposure to PFAS can affect the immune systems of young children. Schaidler and her colleagues will be doing statistical analyses to look for associations between the levels of PFAS in children's blood and antibody levels following routine vaccinations, as well as changes in immune system function and how often they have infectious disease symptoms.

Schaidler says it's too soon to form any conclusions or share results from the research, which was slowed by the pandemic. But she and her team are committed to helping people get information about PFAS, understand test results, and reduce their potential exposure. To do that, they developed an online resource center called the PFAS Exchange. They have prioritized sharing test results with study participants who want to know about their exposure levels and making it easy for anyone to find information about PFAS via their website.

LS: The goal of the PFAS Exchange is to be responsive to the needs of PFAS impacted communities, as well as more broadly being a resource for people who want to learn more about PFAS.

AA: The communities of Hyannis and Portsmouth have updated their water treatment systems to reduce PFAS contamination. Schaider says that technology, while costly, is worth considering for other communities that face elevated PFAS levels in their water supplies.

LS: It's also important to recognize that drinking water is not the only way we get exposed. There may be residual sources of exposure from environmental contamination, as well as the exposures that all of us face from PFAS in food and food packaging and consumer items.

AA: For example, microwave popcorn is a common source of PFAS exposure – the chemicals keep the bags from getting soggy with butter and oil. Schaider says avoiding products that are advertised as “stain or water resistant” is also a good approach to reducing PFAS exposure. PFAS often show up in dust so getting a HEPA filter and vacuuming more frequently can help reduce exposure – especially for kids.

There's more information at the PFAS Exchange website. The Silent Spring Institute also developed a free smartphone app called Detox Me with tips about how to reduce your exposure to PFAS and other harmful chemicals.

LS: And then we're also conducting more of a social science analysis to really understand the experiences and perspectives of people in PFAS impacted communities and get a better understanding of what factors shape how different communities may respond in different ways.

AA: Schaider and her team are conducting in-depth interviews with study participants to understand their experiences and perceptions of PFAS and the potential risks of their exposure to it.

One learning has emerged: For many people in communities with elevated PFAS levels, information is hard to come by. Many healthcare providers are not informed about PFAS and don't screen for certain health effects that might be related to PFAS exposure. Those screenings could help diagnose symptoms down the road.

LS: Typically, people get the advice, “well go talk to your doctor.” Unfortunately, doctors often don't receive a lot of training in environmental health. So not just in how PFAS can be harmful, but more broadly, there's not a lot of information as part of routine medical training about how everyday chemical exposures can affect people's health. And I've heard from community members who say that they've gone to their doctor to talk about PFAS, and maybe their doctors haven't even heard of PFAS at all.

In July, the National Academies of Sciences, Engineering, and Medicine issued a report where they recommended PFAS blood testing for people who may have had high exposures, as well as follow-up medical screening. The report actually cited screening guidance documents from the PFAS Exchange as a model for how this information can be conveyed to both patients and their medical providers.

For Schaider, it's about serving the public with her science.

LS: It's been really rewarding to me through my work, to interact with many different types of community members and to partner with them in doing research that feels meaningful. I've also been able to lead and contribute to research that directly or indirectly has shaped policies that better protect people's health. So that's a huge motivating factor for me is as I look ahead to my

kid's futures, you know, wanting to make sure that they don't have the same concerns about chemical exposures that we currently have right now.

[Music comes up]

I'm Ashley Ahearn. Thanks for listening to Environmental Health Chat.