

Cathy Janasie (00:00):

And so I'm Cathy Janasie. I am a senior research council at the National Sea Grant Law Center and I'm going to be joined today by Anna Watson, who's a water policy specialist and a Sea Grant University of Wisconsin Science Policy Fellow who specifically is going to be touching on PFAS and how it's moving through wastewater and biosolids. So my plan is to give a broader overview of the work that the National Sea Grant Law Center has been doing and then I'll pass it over to Anna so she can talk about her work, which I'm really excited to start hearing about.

(00:40):

So before we begin, I just wanted to go over some quick housekeeping notes. We should have everyone on mute, but please stay on mute as we go through just to keep any background noise down. The webinar will be recorded and we'll be posting it on our website and letting all the participants know when we have the recording ready. We can put any questions that you have throughout the webinar in the chat. I think we'll hold questions for both myself and Anna until the end of the webinar. And then Lauren Fremin, who's out of our office, is online and you can private chat her at any time for any type issues that you may be having throughout the webinar.

(01:27):

So if you're new to Sea Grant, we just wanted to give you a quick background of what the National Sea Grant Law Center is. And so our center was founded in 2002 and we're housed at the University of Mississippi School of Law. That's because when we were founded, the National Sea Grant Office put out a call to see what program wanted to be affiliated with us. And Mississippi, Alabama won that competition. We're now completely separate from them, but we're still located at the University of Mississippi here in Oxford, Mississippi. And our main purpose is to do legal research, education, outreach for the Sea Grant networks and stakeholders on issues of ocean coastal and Great Lakes law that should be of interest to the network. So our website is there and so I encourage everyone, if you're not familiar with us, to go to our website and check out some of our work that we have been doing.

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So to get to the meat and potatoes of what we're here to talk about today, we're talking about per and polyfluoroalkyl substances commonly known as PFAS. And so PFAS are this large group of chemicals. The number always seems to be changing, but last time I checked, it seems to be about 10,000 manmade organic chemicals that have been used in industry and consumer products since the 40s. And the reason why they've been so useful for industry is that they're durable and resistant to heat, water, and oil. So that makes them very good products. So we see them in things like non-stick cookware, water repelling clothing, stain resistant fabrics, as well as firefighting foams and personal protective equipment for firefighters. The issue is that we are now starting to see that they do have human health impacts and so they can in fact affect reproduction, childhood development.

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They can make you more susceptible cancers affect your immune system. And so there's this growing concern now about PFAS and where they are in the environment just because they do tend to be in the environment and not break down once they are there.

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And so the Law Center has been doing research on PFAS for the last several years and we've kind of have two different tracks of this research that we've been doing. And so on the federal level, we've been tracking the major regulatory activities that mostly the US Environmental Protection Agency has been taken according to PFAS. And so this covers actions under the Safe Drinking Water Act with drinking water standards listing two compounds under the Comprehensive Environmental Response and Compensation and Liability Act, also known as Superfund. I got tricked up there. That's commonly known as the Superfund Law, which you would know it more familiarly of Clean Water Act as well as some

recommendations related to monitoring freshwater fish. And then on the state level, this law center has been working region by region to kind of work around the coastal states and the Great Lakes region to look at what's been going on in the state level.

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And so at this point in time, the law center has completed the Great Lakes and Southeast. And so that's mostly what I'll be talking about, our resources that we have for those two regions. And then we're in the process of working through these other regions throughout the country.

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I always like to talk get started when I'm talking about PFAS regulation because PFAS are coming into the environment and all these kind of ubiquitous sources. And so we're seeing it from anything from firefighting to consumer goods to domestic, other domestic sources, agriculture, wastewater, drinking water, wastewater treatment plants. It's getting into the environment all these different ways. And so from a regulatory perspective, that makes it very challenging for us to regulate PFAS just because we have all these different sources of where it's coming into the environment. And so as I'll talk about, our research is really focused on looking at these different pathways of how PFAS are getting into the environment and how the different federal and state agencies are taking action to either prevent more PFAS from getting in the environment or to kind of remediate what is already there. The other thing that makes it challenging is that we are finding PFAS so many places.

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So this is a map from the environmental working group. They have a good PFAS contamination tracker if you've never been on their website. This most recent map they have is updated as of March of this year. And so this map is just showing all the different places that when researchers have gone and looked for PFAS, they have found them and the levels that they found them in. And so we're looking at the substances of which we have over 10,000, they're getting into the environment in all of these different pathways and then we're finding them everywhere. And so that makes a huge, from a policy perspective and thinking about regulation, a very complex issue to deal with and draft regulations for. And then on top of that, we have so much active science and research happening in regards to PFAS that is kind of ongoing and is going to affect what we see in the regulations going forward.

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So I just wanted to highlight at the top so I don't forget to do so the different kind of resources we have so far for the Southeast and the Great Lakes resources. So I'll start with the Southeast. And so we've been partnering with South Carolina Sea Grant and Georgia Sea Grant on a project in the Southeast that's looking at regulation and contamination in that area. And so last summer, one of our law students worked on its story map, which is on South Carolina Sea Grant's website that kind of covers all the regulatory and administrative actions that are happening in that region. It's a really great resource. It's very user-friendly if you want to just click through that story map to kind of see what's going on in the Southeast region. And then it's actually a picture of Blakely. She was our summer student last year and she helped work on some other resources as well last summer that are of use.

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And so we have a general kind of explainer and communication briefs on our website, which I have the link or the QR code for there that you can go directly to. And then Blakely last summer put out two different publications of use for PFAS. So the first is looking at the multi-district litigation that's happening in South Carolina on the federal level directed at Firefighting Foam. And so it's a very good overview of what is in that litigation as well as a sandbar article that provides an overview of what EPA's draft risk assessment is for sewage sludge and biosolids. So both of those are very good resources to kind of give a very broad overview of what we're seeing at that level. And then in the Great Lakes, we have several different resources that we wrapped up at the end of 2025. And so the first is a comparative

analysis that looks at all these different pathways, which I'll cover in a second and looks at how the US EPA has been regulating those pathways and then comparing how the different states and the Great Lakes and Lake Champlain region have taken action at this point in time.

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In connection to that, we have legal scans and then compilations of compiled laws and regulations for the Great Lakes states on our website as well as two case studies. One is on biosolids, which Anna's going to be talking about in a few minutes. And then the other is on Minnesota's consumer products law, which is very comprehensive. It's a Amaras law. And so it goes through Amara Strand, who was kind of the champion of the law in Minnesota and kind of how they worked to get it through the policy process and enact it in Minnesota. So we've, as I said, have really tackled our research to look at what's happening in regulation on a pathway basis. And so this list is ever growing and changing for us here at the Law Center, but in general, we've been looking at maximum contaminant levels for drinking water. So these are hard regulatory standards that public water supplies have to meet in the states and then as well as health-based values for drinking water that are just guidance.

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And so what are the states saying when you should be concerned about when there's a certain level of PFAS in your drinking water? We've been following certain PFAS being designated at hazardous substances on both the state and federal level as well as surface and groundwater protections and then product restrictions covering firefighting foam packaging as well as a whole other list of consumer products from carpets to clothing to cosmetics to all kinds of thing that the states are taking to regulate. We've looked at food consumption advisories, which I will cover, and then biosolids as well.

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So when we started doing our research, we decided we needed a way to kind of capture what the different things we were finding were. And so we've created these charts for the Southeast and the Great Lakes at this point in time. And so there are other existing resources out there. Safer states, for example, has a policy tracker where you can go on and look at both law pending and pass legislation they will tell you about. But we found that as we were starting to do our research in this space that there wasn't a resource that kind of captured all these different kinds of actions. So on top of what laws have been passed or proposed, thinking about what agency actions happening, either if that's a regulation that they've enacted or any other kind of informal agency action where they might be just doing sampling or testing to figure out what's going on with PFAS.

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In the Southeast in particular, we really got into tracking while the state's working with their state universities will help with some of the testing and sampling as well as where states are kind of giving money and appropriating money for either PFAS studies, sampling, as well as remediation efforts. So with that, I will go to our first chart. So the first one is what we've seen so far in the Southeast for PFAS regulation. Again, these are all constantly being updated. That's one of the major challenges as well, I should say with PFAS is that we're always seeing new things getting enacted or introduced. So these are always kind of work in progress charts that we've had, but we really found in the Southeast when we first started, when we looked for laws and regulations, we said, "Oh, there's not that much really going on in the states." But then once you kind of dug deeper and started to track things like pending legislation, legislation that's failed, particularly those agency actions, what are the agencies doing without kind of direction from their legislative bodies under their existing authorities?

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We found a lot of agency actions particularly with sampling and testing and then college partnerships and some of the states in the Southeast are really strong, working with in Florida and North Carolina, their state universities to work on testing as well as appropriations again for these sampling and kind of

remediation efforts. And so we've been trying to get this more comprehensive look at the Southeast in particular, because again, if you just look at past legislation, there's not a lot of those icons on this chart, but then when you look at the bigger picture, there is a lot actually going on in the Southeast region.

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And then if we compare that to the Great Lakes, we have a different picture. So the Great Lakes has been a very active region in regulating PFAS. And so that has been one of the biggest struggles for us in trying to capture on a bigger picture what's going on in the Great Lakes, just because this chart I think in a big blow-up poster form is really easy to follow maybe on your screens right now, not so much, but we see a lot going on in the Great Lakes and particularly if you look at that first line firefighting foam, which I'll talk about in a moment, almost every state in the region has passed legislation related to firefighting foam. We have states taking action to set drinking water standards as well as health advisories. They've taken action related to hazardous waste designations, surface water and fluent limitations.

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And so we see a lot more activity in the Great Lakes states. And so all of this is captured in that comparative analysis I talked about. So I'm going to give a broad overview in the next few minutes of what we found, but again, any of those resources I just highlighted definitely dig down deeper into all of these activities that we're seeing at the state level. But what we found, which was interesting in the Great Lakes is so every state in the Great Lakes region except Pennsylvania has taken action. Georgia has also passed law related to firefighting foam if we're thinking about the Southeast. But what was interesting and looking particularly at the Great Lakes is that their provisions are actually, some of them are quite different. And so we see states enacting these different types of bans. So two states have said you can't ever use firefighting foam that has PFAS, or other states have been less restrictive.

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So they're saying don't use it when you're either training or testing. We don't need to kind of expose people, but you can still use it in firefighting. Other states have said you can't manufacture, sell or distribute it in our state at all. We don't want it anymore. And then any of those can have exceptions. So some of the states have said in an emergency situation, you can use firefighting foam with PFAS because you're going to need it to put out the fire. And then the states have taken some additional actions as well. So a lot of questions we got initially at the law center were talking about, okay, if we're going to ban firefighting foam with PFAS, what are we going to do with it all? So some states in the Great Lakes have enacted collection programs where people can actually bring the banned firefighting foam.

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There's notification requirements that if you do use it, you have to tell the state agency and then some additional programs. Indiana is testing actually the blood of firefighters to see how much PFAS is actually in their blood from being exposed. But again, they're acting, but in this vast array of action, it's not necessarily consistent. We see something very similar when we look at the drinking water standards that the states have enacted. And so you can see from here the last line on the bottom is the EPAs enacted MCLs that they put out in 2024. And then if you compare that to the values that we've seen from the different states in the Great Lakes, the values are all over the place. And so definitely depending on what the state thought was achievable for their drinking water providers, that's a big issue when we're setting these standards, but then also what's the sign showing?

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And so again, we can say five states have set MCLs in the Great Lakes. Those MCLs really varied quite a lot before we saw the ones come out from EPA.

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And then just quickly talking about the EPA standards, just as an update on May 18th, they finally put out proposed rules to change their drinking water standards. They first announced they were going to do this

almost a year ago in May of 2025. So the rules are out now. They put out two separate rules. The first was that they're going to keep the PFOA and PFOS standards, but they want to delay compliance for the water systems until 2031. And then the second rule they put out would rescind all of the other standards and that's based on them saying, we don't think the Biden EPA followed the direction of the Safe Drinking Water Act. When they set these standards, we don't think they're legal so we're going to resend them. We covered this in previous webinars. This drinking water rule has been challenged in litigation. That litigation is still ongoing.

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The EPA at this time tried to set pull all of the standards, but those PFOA and PFOS out of litigation at this point in time, the court said they couldn't do that because the rescission has not been finalized. And so that's all still part of the litigation. Public comment on the proposals is open until July 20th and there's actually a public hearing on July 7th that anyone can register for and ask to speak at. And so all details of commenting or going to that public hearing are on the EPA website if you just Google drinking water standard update, it will pop right up for you if you're interested in either commenting or listening to that hearing. And so then just quickly to look at what other kind of activities we've seen EPA has also put out in 2024 kind of the science-based water quality concentration for 10 PFAS.

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They're meant to be the amount of concentration that we would want to have for aquatic species to live, grow and reproduce in the water. There are benchmarks, they're not regulatory, so they're only meant for states and tribes to use them when they're developing their own water quality standards. And so there are guidance for the states, but nothing that's hard and fast that needs to be implemented by anyone. And then related to that, when we talk about fish monitoring, EPA has put out a list of PFAS that they think states should be kind of thinking about and testing for when we're thinking about people eating fish and shellfish. And so this is a growing concern that we have as more studies are coming out with fish and shellfish showing that we do have PFAS levels in them. And this is kind of a hard thing to regulate because at the same time, the agencies are saying we encourage people to eat fish and shellfish because it's very good for us.

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And so where do we balance? At what point do we kind of balance saying there's so much PFAS you shouldn't be eating it because that risk is kind of outweighing the benefit that you're going to get from consuming fish or shellfish. So in the Great Lakes, we've seen quite a bit of activity on food consumption advisories. So most states in the region have had some kind of fish advisory for PFAS with only Ohio and Vermont just sampling at this point in time. But then we've also seen a handful of other species where they've issued advisories where they're concerned about people kind of going out and hunting and consuming different species. And so deer in Michigan and Wisconsin, waterfowl in Wisconsin, and then some other species in Michigan as well. And so the Great Lakes have this Great Lakes Fish Consortium, which is all kind of the states on the Great Lakes as well as the ones in the Ontario agencies and some other Great Lakes Indian Fish and Wildlife Commissions.

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And so their main purpose is to gather data so that they can help states do fish consumption advisories in the Great Lakes. And so they have put out two different kind of guidance best practices for PFOS and fish. So they first put one out in 2019 based on kind of EPA data at that time and then they just updated their guidelines based on the data that the EPA used in their 2024 drinking water standards. And so they updated it based on the new science out of EPA. And so again, this best practice is kind of guidance to the states and the Great Lakes and they can adopt them as they want. But in the Great Lakes we've seen, sorry, again, almost every state issuing some kind of PFOS fish advisory. So this actually is a resource that the agencies have in the Great Lakes to use when they're thinking about those advisories.

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We've seen advisories throughout the country and other states as well. What makes fish advisories hard from a purpose of kind of tracking what's going on is that they go kind of water body by water body. And so here's just an example of North Carolina saying Lower Cape River has high PFAS. We're concerned about this. And then I just wanted to highlight a fact sheet that came out with some Sea Grant partners out of the New England specifically looking at shellfish because we do get questions at the law center, kind of what's happening with shellfish and marine species. And so there has been some activity in the Northeast starting to put out some consumption advisories on these different kind of marine species as well.

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And then just quickly, I wanted to wrap up with another quick update. And so we've covered in past webinars and I highlighted that blog from Blakely going over the firefighting foam multi-district litigation, but they consolidated basically in the district in South Carolina all the firefighting foam cases that are going on throughout the country. It's now over 10,000 cases in this multi-district litigation and they have these different types of lawsuits that they're kind of categorizing as they move through. But I just wanted to give a quick update on one that's just got kind of designated and is starting to go through this process. So they call these cases by weather cases because they're kind of the test case to kind of see how one of cases of different kinds of groups that are in this multi-district litigation are going to play out. And I just wanted to highlight this because it comes up a lot in conversations about PFAS in particular firefighting foam, the contamination that we've seen from US military bases.

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So they've designated a lawsuit from New Mexico against the federal government that's based on EPA designating PFOA and PFOS under CERCLA in 2024. And it's based on some of the contamination that they're seeing in New Mexico and the need to do cleanup, particularly in groundwater and how it's affecting agriculture in the state. And so there's over 500 cases that are similar to this in the litigation. So this is a case that we're tracking to kind of see how it goes and plays out and what the court says about what the liability for the federal government is going to be for contamination from firefighting foam. And so just to wrap up, just wanted to shout out the Sea Grant PFAS COP. If you're not a member but you're interested, definitely you can reach out to me. We're doing a webinar series ourselves and so we just meet, we try to meet once a month to talk about what issues we're seeing as Sea Grant agents and the kind of questions that we're getting.

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So again, reach out to me if you're interested and then thank you. I just wanted to thank our funders. We've been able to do the Southeast and Great Lakes work based on funding from NOAA and the National Sea Grant office as well as Indiana Illinois Sea Grant. And so with that, I'm going to stop my share and turn it over to Anna.

Anna Watson (28:53):

Great. Thank you, Cathy. And thank you to Sea Grant Law Center for giving me some time to speak today. Let me just go ahead and share my screen. All right. So hi everyone. My name is Anna Watson. I am a water policy specialist and a Sea Grant UW Science Policy Fellow here at the University of Wisconsin Milwaukee's Center for Water Policy. And the center's mission is to provide world-class interdisciplinary solutions to resolve regional, national and international problems related to the protection and conservation of freshwater resources. And today I'm going to talk about the main research project that I focused on during my time here as a fellow, which is the pathway of PFAS from wastewater to biosolids and to food and the regulatory mechanisms that are in place to address this contamination and how they're continuing to develop.

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So just to give an overview about what I'm going to be talking about today, first I'm going to give some background on the contamination pathway. Then I will touch on federal regulation and actions, specifically wastewater discharges and biosolids. And then lastly, I'll conclude by touching on some of the state actions that we've seen. So just to start off to make sure that we're all on the same page with the terminology, I'll be using the term biosolids and sewage sludge. They're often used interchangeably, but in this presentation today, I'm going to be using the term biosolids to mean the semi-solid byproduct that is produced at wastewater treatment facilities after the solids and the liquids are separated. They're treated to conform with federal EPA standards and they're meant for land application. I do want to note briefly about industrial sludge. Industrial sludge is sludge that is separated from wastewater that is generated during industrial processes happens on site at that industrial facility not getting sent to the wastewater treatment plant.

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And my broader research also looks at sludges from industrial sources as a contamination pathway, particularly things like paper mills. But today's research or presentation focuses on municipal biosolids just because interest of time and also they've been receiving the greatest regulatory attention and I think they provide a useful case study. So how do PFAS even end up in our biosolids? Similar to one of Kathy's graphics, you can see up here just some of the sources, but it begins with them being discharged into our wastewater systems. This comes from a variety of sources, comes from domestic users like you and me. Things like if we're using nonstick cookware or maybe cosmetics that have PFAS, those can shed down our drain and into the wastewater treatment system. Additionally, if we place products that have PFAS in them in landfills, they'll break down and produce something called a landfill leachate.

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And then two of the bigger sources are industrial users that might use PFAS in their manufacturing processes and discharge that water into the broader municipal wastewater system. And then also firefighting foams, which we've touched on. When those are discharged, they can go down our drain and enter the wastewater treatment system.

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So why is this a problem? Well, PFAS, they're made up of such a strong bond and the technology surrounding their kind of treatment and destruction is really still emerging. So the current systems that we have in place, PFAS, they resist normal wastewater treatment systems. So when biosolids are being treated for things to meet pathogen reduction requirements at EPA sets, PFAS are not being removed. They're persisting in those biosolids that we're seeing. And this is a problem because the majority of biosolids that are produced in the United States, they are land applied. So you can see in this graphic from EPA here, about 60% of biosolids produced are land applied versus the other two main disposal routes are land filling or incineration. And not only are they disposed of via land application, they're also primarily disposed of on land on agricultural land. So you can see in this second graphic, 53% of land where these biosolids are disposed of is agricultural land.

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And this is because they offer a good fertilizer option. They're high in other things such as phosphorus and nitrogen that make them a good option for that.

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However, when you're applying these biosolids that might be contaminated with PFAS to this land, the PFAS, they can transfer into the soil, the groundwater, they can be uptaken into plants. And now we've seen in a couple cases across states into livestock and livestock byproducts such as milk. So I have pictured here Fredstone, who's kind of the catalyst of bringing this issue to light. In 2016, the milk from his cows was found to be contaminated with high levels of PFAS after they had been spreading biosolids and paper

mill sludge on their field for about 20 years. And as we've touched on before, PFAS are toxic. They've been increasingly linked to negative health consequences and EPAs even said before that they think diet is a dominant source of human exposure to PFAS. So if we're putting these contaminated biosolids on our land, we're kind of opening up a pretty big contamination risk pathway to humans and human health.

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So now I'm going to move on to discussing what regulatory mechanisms could be utilized to address this contamination pathway and how they've been utilized so far. So first, under the Clean Water Act, EPA regulates discharges from both municipal wastewater systems and then also industrial facilities. So they regulate both direct discharges and indirect discharges. So when I say direct, think about your typical point source discharge like a pipe releasing water into Lake Michigan. An indirect discharge is when something like an industrial facility is discharging its water, its wastewater to that broader municipal wastewater treatment facility. And so EPA develops national wastewater discharge standards for categories of industrial users under something called effluent limitation guidelines. So these guidelines, they're technology-based regulations that are supposed to reflect the greatest economically achievable pollutant reductions for an industry and these effluent limitation guidelines regulate both direct discharges, like those point source discharges and indirect discharges.

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So EPA in states will implement these guidelines for those point source discharges through NPD's permits, national pollutant discharge elimination system permits while those wastewater treatment facilities, states and EPA will enforce something called national pretreatment standards that are established through those effluent limitation guidelines for those indirect dischargers.

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So what have we seen the federal government do so far in this category? Going back about five years, 2021, EPA released their PFAS strategic roadmap, kind of laying out some of the actions they wanted to take to address PFAS. One of the key actions they talked about was restricting PFAS discharges from industrial users through effluent limitation guidelines and those NIPTE's permits. In 2021, the current EPA administrator sent a memo to states that was aimed at addressing PFAS discharges in NIPT's permits and through the pre-treatment program. And this memo kind of proposed a set of recommended actions that included recommending that industrial users test the water they're discharging for PFAS, that they maybe seek alternatives for their PFAS uses, then also recommended that those wastewater treatment facilities start monitoring PFAS in their influent water, their effluent water, and also their biosolids. But again, this is just a memo.

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It's not a regulation, it's not anything enforceable. In 2024, EPA released an update on their PFAS strategic roadmap, summarizing what they've been able to do so far. And again, at this point, they kind of reiterate their intent to propose those effluent limitation guidelines for PFAS manufacturers and a couple other categories. And then in 2024, we see them release a preliminary effluent guidelines program plan, plan 16, and this included some updates on PFAS studies that they were doing and also again, reiterated their intent for rulemaking for PFAS in those effluent limitation guidelines. Where does that leave us today, current day? PFAS testing and limits, they're still not required in those NIPT's permits or pre-treatment requirements, although we have seen some states begun to take that into their own hands and incorporate that into their own permit requirements. This is something that still remains on EPA's rulemaking agenda as of right now, but nothing has been proposed.

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Similarly, for those effluent limitation guidelines, nothing for PFAS has been established. However, as recent as of May this year, they said in a press release statement that the agency is currently developing a proposed rule that they anticipate issuing for a comment in the coming months.

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So moving on to federal regulation of biosolids, how are they regulated? Well, they're also regulated underneath the Clean Water Act, Section 405, and then part 503 of the Code of Federal Regulations. And under the Clean Water Act, EPA is essentially directed to establish numeric limits and best management practices for toxic pollutants and biosolids. And in addition to that, they're directed to periodically review existing regulations and identify any additional pollutants that could be adversely affecting public health or the environment in biosolids. EPA has used this authority to regulate biosolids at publicly-owned treatment works, those wastewater treatment facilities, and it currently regulates 10 heavy metals. However, EPA has not updated this regulation since it was promulgated. They haven't added any new pollutants since then. They've identified a little over 300 pollutants in their sewage sludge surveys that they're taking place throughout the years. However, like I said, they haven't updated the regulation since it was finalized.

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And this graphic here actually comes from EPA, kind of walks through the rulemaking process for what they would have to do to add a new pollutant under this regulation. So they'll conduct biannual review sewage sludge surveys. If they find something that catches their eye, they'll move on to a pollutant risk screening and they'll ask, "Does this exceed our level of concern?" If it does, they'll move on to something called a risk assessment, which is a little bit longer, more of a technical document. And again, they will ask, "Does this pollutant exceed our level of concern?" If it does, then they will start to consider promulgating a regulation for that pollutant.

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So what have we seen so far on federal biosolids regulations? While there is a case that is very on point on this topic, it's called Farmer versus EPA. It's currently on appeal. The plaintiffs in this case were agricultural producers who claimed that their properties were contaminated with PFAS after they used biosolids as fertilizer. And in their complaint, they were alleging that EPA has violated their statutory duty underneath the Clean Water Act by failing to identify and regulate PFAS in biosolids. The district court actually dismissed this case and they held that while EPA does have a statutory duty to periodically review contaminants on that biennial basis, they're not regulated or they're not required to regulate those pollutants on the same timeline. As I said, that's currently on appeal. I think it will be an interesting result to see what happens with it. The appellants are arguing on appeal that Congress's intention in the Clean Water Act under that language was to require EPA to affirmatively identify and regulate additional substances every two years.

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Additionally, in January of 2025, EPA released a drastic risk assessment for two PFAS compounds, PFOA and PFOS in biosolids. I won't go into too much about what the risk assessment concluded and all of the information in that, but the comment period has now closed. The risk assessment has yet to be finalized. There's no mandatory timeline within which EPA must conclude that review of comments and publish a final assessment. But if you'll remember from the graphic on the previous slide, we're at this point now for PFOA and PFOS. So if they finalize it and decide that PFOA and PFOS exceed their level of concern, then they will start to move forward and consider a regulation and potentially some rulemaking.

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So moving on to what we've seen states doing, since there's been not a lot of federal action on this, states have begun to gap fill. And for my research, I've found that there are three main approaches that states are taking. Two states, only two states have completely banned land application of biosolids completely and that's Maine and Connecticut. The second approach is what I call tiered requirements just because depending on the numeric value of PFAS found in biosolids, when they test, they'll be subject to a

different set of requirements. This is kind of the most popular model that's been adopted. It's also called the Michigan Model because Michigan was kind of the pioneer of this approach. However, as you can see here, this is not an exhaustive list because I couldn't fit in all of the states into this slide, but as you can see here, Virginia and Michigan, the numeric values, they're differing across states.

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Virginia, they're prohibiting land application at 50 parts per billion while in contrast, Michigan's limiting it at a hundred parts per billion. So we're seeing some differences there. And then lastly, the most basic approach to the least stringent is just a basic monitoring and testing requirement. So examples of this are Massachusetts and New Hampshire. They'll require regular testing of PFAS in those biosolids, but those results aren't tied to any specific requirements or actions like you see with those tiered requirement states.

(45:43):

Additionally, PFAS has been a hot topic in legislation, but PFAS and BioSolids has also been receiving a lot of attention in the last legislation year. I have this nice table from Rockefeller Institute of Government. This is just one page of it that kind of gives us some examples of the legislation that's been introduced. It's ranged from other states proposing bans completely on biosolids land application like Maine and like Connecticut. Other states are just trying to establish testing. Virginia's requirements from the previous slides were actually established via legislation. Other legislation being introduced is just trying to provide funding to fund these initiatives and fund this testing. And then some of the legislation too is requiring that institutions are directing institutions to do more studies on this topic because a lot of the science is still emerging.

(46:49):

So just to conclude with some takeaways, I think that this is really an emerging issue. It's definitely on the federal government's radar, but I kind of think that there's a little bit of a wait and see approach if they will follow through with any of these proposed rules, whether that's for those effluent limitation guidelines or whether it's for those biosolids. In the meantime, states have begun to fill the gap. However, I do think that the range of state approaches kind of highlights the need for that consistent federal standard. And additionally, I think states will need to continue to be flexible on this issue. I think the standards for safe amounts of PFAS and biosolids is likely to continue to change as more information and more science becomes available, because like I said, it is still emerging and I think there's a lot that could benefit from further study.

(47:52):

So thank you all for listening to me today. I also want to take a moment to thank my colleagues that have assisted me with this research, our assistant director, Tressie Kamp, and then our director of the center, Melissa Scanlan. And then with that, I'll stop sharing and happy to take any questions.

Cathy Janasie (48:16):

Yeah. So as a reminder, if you have any questions, put them in the chat and we'll be happy to ask them. Anna, when you were doing your research, did you see any of the states give any reasons for why maybe they're still doing just testing or monitoring instead of taking a more enforceable action towards biosolids?

Anna Watson (48:40):

Yeah, I think a lot of the states, especially to even states that have more of those tiered requirements have even said that they're waiting for a federal standard to come out before they issue something like an official rulemaking, et cetera. So I think that might be part of it, but otherwise places like Massachusetts and New Hampshire, which I included as examples of that basic monitoring and testing, I feel like not

much explanation beyond that. I think some people are just hesitant about the science and the potential of those numeric limits if they set some of having to change them.

Cathy Janasie ([49:24](#)):

Yeah, if the EPA does put them out. And I'm trying to think, do you have a sense in getting through if we get a finalized assistance from EPI, how long it would take them to get through that other process?

Anna Watson ([49:42](#)):

That's a really great question based on the drinking water level standards that we've seen. Granted, there has been a change in administration since they started doing that, but I think we could probably be a year or two away from that still, even if they do finalize that risk assessment soon.

Cathy Janasie ([50:00](#)):

Yeah, because just even thinking about the rescission with the drinking water, it took them a year from when they said they were going to act.

Anna Watson ([50:10](#)):

Exactly.

Stephanie Otts ([50:13](#)):

Hi, this is Stephanie just popping in. I'm the director. I've been watching the chat, so there is a couple of questions in the chat for either Cathy or Anna. So one first person to ask, is FDA looking into creating a PFOS limit?

Anna Watson ([50:31](#)):

Yeah, this is also something I touch on in my broader research. I'm working on a longer form academic article that will hopefully get published as a law review piece. But FDA, they haven't set anything and I don't think that they plan to for PFAS. They've conducted a couple of different studies, including something called total diet studies, which it's not a big sample size, but they will just take a lot of different samples from a range of foods that are included in a typical diet. And from those studies and a couple other that they've done that are more targeted on specific food products, they have said that they don't think that there is reasonable, a big enough risk essentially for them to start regulating PFAS in food products or setting more of those numeric limits. I think that that might be due to the fact that we maybe just don't have enough testing on it yet.

([51:31](#)):

I think especially when you look at these cases that we've seen popping up, especially in Maine, I think it still is a risk despite the FDA testing that is coming out.

Stephanie Otts ([51:46](#)):

Thanks.

Cathy Janasie ([51:47](#)):

Yeah, just to build on that, I think that is the issue is the testing is really expensive for PFAS still, so it's still hard to test for PFAS levels, so that's part of the reason why we see so much appropriations even going and partnership with the college universities. But then again, I think

([52:13](#)):

Kind of a hesitancy too just to try to think about when we think about the fish advisories coming out of Great Lakes, they're based on, again, how much fish you're eating. And so there's a lot of calculation as Anna's talking about where the exposure's coming from. It's based on what you're eating and that even the biosolid risk assessment that Anna touched on is based on just people who live at the farm and who are eating more farm products. So there's definitely all these moving pieces that we're seeing that are maybe making it not as easy as we would hope it would be for FDA to act there.

Stephanie Otts ([52:53](#)):

Thanks. And I think this question might be for you, where can we access the new regulations on biosolid land disposal?

Anna Watson ([53:04](#)):

I don't know if you're referring to the state ones or EPA. We have not at the center published anything on my research yet that you could easily access that table that I had pulled up, I would actually direct you probably to Sea Grant's information that they have because I actually utilize that throughout my research and I think that's a good source. I also think Safer States, which I think you touched on as well, Cathy, is a good resource that has some of those regulations laid out clearly in a table.

Cathy Janasie ([53:38](#)):

So we have them for the Great Lakes in that case study we have for biosolids. And then again, Safer States would have info on the legislation, but I don't necessarily know if the regs would be in there. So it's definitely such a moving piece that we're still working on gathering more info for a bigger group of states than just the Great Lakes.

Stephanie Otts ([54:11](#)):

Okay. I don't see any other questions in the chat, but yeah, people there's still a minute or two. If you have something, go ahead and ask.

Cathy Janasie ([54:21](#)):

Yeah. Lauren, I see your comment in response to saying it's interesting to have guidance on recreational fish, but not commercial. That's come up in discussions that I've been having, especially with the Sea Grant extension agents who work on fisheries and aquaculture, that same issue thinking about, okay, we're going to put guidance based on what we can go catch, but then there's not really looking at what's in the food. And again, that's just going back to all those issues with FDA for sure. And then thanks, Ella, for sharing the link for Virginia in the chat.

Anna Watson ([55:17](#)):

I guess I might ask you, Cathy, have you guys done any research into potential ramifications if PFAS were listed as a hazardous substance under RICRA? That's something that I've come across in my research, but I feel like I've not received a lot of information on.

Cathy Janasie ([55:38](#)):

No. And so I think it was 2024, they've put out a draft thinking about listing them and then we've seen nothing really come out from EPA since then. So it does make you wonder the implications of what that would be if we start regulating the movement of all these waste and recycled materials that could have it in them. So no, but besides EPA saying they were thinking about it and then not acting on it.

([56:18](#)):

And then I see the question in the chat, so we will be sending out a recording of our webinar and so we will share that with all participants. And so you should be looking out for an email to be getting that recording. And with that, I don't see other questions coming in, so thank you so much for sharing your work, Anna. That was really interesting to get that deeper dive into BioSolids. So thank you for being on and thank you all of you for joining us today to talk about PFAS. And with that, as I just mentioned, be on the lookout for an email with the recording and so enjoy the rest of your day.