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HIF323.180

CYANOTOXINS IN DRINKING WATER

WEDNESDAY, NOVEMBER 19, 2014

House of Representatives,

Subcommittee on Environment and Economy

Committee on Energy and Commerce

Washington, D.C.

The Subcommittee met, pursuant to call, at 10:18 a.m., in Room 2322 of the Rayburn House Office Building, Hon. John Shimkus [Chairman of the Subcommittee] presiding.

Members present: Representatives Shimkus, Latta, Harper, McKinley, Bilirakis, Johnson, Tonko, and Barrow.

Staff present: Nick Abraham, Legislative Clerk; Leighton Brown, Press Assistant; Jerry Couri, Senior Environmental

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Policy Advisor; David McCarthy, Chief Counsel, Environment/Economy; Tina Richards, Counsel, Environment; Chris Sarley, Policy Coordinator, Environment & Economy; Jacqueline Cohen, Democratic Senior Counsel; and Ryan Schmit, Democratic EPA Detailee.

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Mr. {Shimkus.} Call the Subcommittee to order, and the Chair will recognize himself for 5 minutes for an opening statement.

Today's subcommittee will be taking a look at the harmful algal blooms in drinking water, including the source water used for drinking. I thank Representative Latta for his efforts on this issue, for bringing it to the Subcommittee's attention. He has delved into the minutiae of this issue in search of a useful and long term solution to this problem. Having sit in--having sat in some of the meetings with Mr. Latta, it has been--that he has been having on this issue, I realize what a complex and widespread issue this is, but one which only gained national attention a few months ago.

Some folks may be tempted to think that there are easy solutions to this problem, but I caution jumping to simple or sweeping conclusions. There is no single smoking gun that leads to algae based toxins in drinking water. I believe we will hear our witnesses say that there are still plenty of things that we don't know about this subject.

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I understand from drinking water treatment professionals that many types of cyanobacteria and diversity of the habitat make it complicated to predict the precise conditions favoring their growth. Physical factors that affect whether cyanobacteria grow include available light, weather conditions, water flow, temperatures, and mixing within the water column. Acidity and nutrient concentrations, including those from municipal wastewater, urban lawn and golf course management, and agricultural processes all contribute to algal bloom growth. In addition, we will hear testimony that experiencing a blue-green algae bloom does not always mean there is a cyanotoxin problem.

We need to know more about this issue. We understand that there are--at least 35 states have reported blue-green algal blooms, but we need to separate out the drinking water concerns from those seen in the recreational waters context. This hearing is meant to focus on the Safe Drinking Water Act, not lawns in other subcommittees or committees, whether that be a regulation of nitrogen disposition under the Clean Air Act or nutrient management under the Clean Water Act.

There are plenty of questions within the context of

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ensuring the provision of safe drinking water that we should focus on and learn about today. Our hearing will allow us to focus on where we are with our understanding of the U.S. EPA's effort on better grasping blue-green algal--algae in the drinking water context, including health effects and current data, monitoring and testing techniques, and public health communication strategies. We will also hear from witnesses on what happened this past August in Ohio, and what lessons we learned. Finally, we will get a better sense of what drinking water treatment professionals are doing to better prepare to handle these events.

I want to thank the witnesses for being here today, and yield the rest of my time to Mr. Latta.

[The prepared statement of Mr. Shimkus follows:]

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Mr. {Latta.} Well, thank you, Mr. Chairman, and thank you very much for holding this very important hearing today. I really appreciate it, and your interest in the subject, because it affects so many millions of Americans,

First, I would like to recognize one of our witnesses today from my home state, Ohio EPA Director Craig Butler. Mr. Butler has been director of the Ohio EPA since early 2014, and previously served in the governor's administration as the assistant policy director for energy, agriculture, and the environment. I have had the pleasure of working with Director Butler on issues of great importance to Ohio. I am grateful that he is able to be here today to share his expertise and insights with the subcommittee.

The United States is truly fortunate to have a vast amount of surface water. It provides immense value to our nation's ecosystem and economy, as well as drinking water to countless Americans. To me, nowhere is this more evident than the Great Lakes, the largest surface freshwater system on Earth, that provides drinking water to tens of millions of people.

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Unfortunately, cyanotoxins in public drinking produced from harmful algal blooms are presenting a serious concern for our health. This past August, half a million people in the Toledo area, many of which are residents of my district, were unable to utilize their public drinking water for over 2 days without risking potentially negative health effects due to the high level of cyanotoxins, microsystems--detected in the city's public water supply. During that time, both concerns and questions were raised about testing protocols, treatment process, appropriate responses on how to respond to the problem in the short term.

I know from my personal experience that the State, including Director Butler, and the U.S. EPA worked tirelessly with the local water utility to get the situation under control. I commend their hard work, and the steps they have taken since to try to ensure this does not happen again.

However, I believe to fully protect our citizens' public drinking water from cyanotoxins, it is imperative that Federal, State, and local governments work together to better understand the science and human effects of cyanobacteria and cyanotoxins, as well as the best utilization of available

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testing, monitoring, and treatment technology.

I am confident, by working together, we can accomplish this. I look forward to today's hearing, and hearing from our witnesses on what types of strategies, actions U.S. EPA would take to close these gaps and improve human health and environmental protection. And with that, Mr. Chairman, I would yield back my time, and also I would ask that I have a letter from the Ohio Farm Bureau that I would like to have inserted into the record.

[The prepared statement of Mr. Latta follows:]

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Mr. {Shimkus.} Without objection, so ordered in.

[The information follows:]

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Mr. {Shimkus.} And, with that, I--to turn to Ranking Member Paul Tonko for 5 minutes for an opening statement.

Mr. {Tonko.} Thank you, Mr. Chairman, and good morning to each and everyone. Thank you again, Mr. Chair, for scheduling a hearing on what I believe is a very important topic. Water is an essential resource. It has no substitute. Although 70 percent of the planet's surface is covered with water, only a small fraction of that is of sufficient quality to serve our needs.

Much of the Eastern half of the United States is blessed with ample freshwater resources, and no region is more well-endowed than the areas bordering the Great Lakes. The Great Lakes contain 21 percent of the Earth's surface freshwater supply, and 84 percent of the United States' surface freshwater supply. We share these resources with Canada, and they are vitally important to the wellbeing and economic fortunes of over 30 million people living within the eight states of our nation, and province of Ontario. The importance of this resource cannot be understated. We must protect it.

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I am reminded by my colleague, Representative Kapstur--Kaptur about the importance of water quality, and the impact on her area with this issue. The algal bloom that resulted in Toledo's residents losing the use of their tap water is not a new problem. In part because Lake Erie is the shallowest lake, with the warmest waters, algal blooms have been a well-known problem for decades. Investments made in better sewage treatment and control of point sources in the 1960s and 1970s improved the situation for a time. But the steady input of nutrients from agricultural operations, especially from the Miami Watershed, expanded populations of invasive species, and changes in weather patterns have continued to fuel harmful algal blooms.

We cannot do much about the weather patterns, but we can do much better in managing nutrient inputs and invasive species. Mr. Donahue points out in his testimony that the cost of these blooms, and for treating water to remove the resulting toxins, is falling on the water utilities and their customers. That is true, but the cost of these algal bloom events are even larger than that, and they are also falling on other individuals and businesses that rely on a clean,

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bloom free Lake Erie to support tourism, to support recreation, to support fisheries, and other activities.

The International Joint Commission released a report this past February with 16 recommendations for action by the governments of the states and province within the Great Lakes Basin. The report identifies phosphorus loading as a key driver for the increased intensity and frequency of harmful algal blooms in Lake Erie. Seven of the recommendations specifically target phosphorus nutrient loading from agricultural lands. This is the largest unchecked input of nutrients to the lake.

Farmers do not wake up every morning with a plan to cause algal blooms in Lake Erie, or any of the other water bodies that are experiencing this problem, but it is happening as a result of farming practices, and the problem needs to be addressed. Agriculture is important to this region, and to our nation, and agriculture also relies on a good supply of water. The goal here is to strike an appropriate balance that keeps farms economically viable and productive, but reduces the transport of soil and nutrients off the land. There is no denying that agriculture practices

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result in nutrient runoff at levels that cannot continue if we are to get these blooms under control.

The good news is that our land grant universities, the Natural Resource Conservation Service, and others have developed best management practices that can be adopted to achieve some of the needed reduction. And EPA has been working with states of the Chesapeake Watershed to implement basin-wide nutrient management plans to address similar problems that we have noted in the Chesapeake Bay. Nutrients that are coming off of fields are not benefitting anyone. Better nutrient management will not only benefit water quality, it will benefit farming also.

Until we get these blooms under control, we are going to need better information for water utilities and the public about the toxicity of these blooms. But to truly ensure the safety of drinking water--drinking water supplies, we will need to take serious steps to correct the source of the problem. These blooms not only jeopardize public drinking water supplies, they result in dead zones due to lack of oxygen when the blooming organisms die, and sink to the bottoms of lakes and estuaries.

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Ultimately, it is less expensive to prevent pollution than it is to clean it up. This problem is not unique to Lake Erie. It is happening in other places as well. We are all dependent upon clean water supplies, and we all must work together to better manage these vital resources. Maintaining safe drinking water available to every household through the tap is one of the conveniences that define a modern society. We cannot compromise on that guarantee.

We have an excellent panel of witnesses before us today. I look forward to hear your testimony, and I thank you for participating in this very important hearing. And, Mr. Chair, I hope we will be able to spend time over the next 2 years finding a way to address the backlog of drinking water infrastructure needs that we have in communities across this great country. I would welcome an opportunity to work with you, and other members of the committee, on this important issue in the next Congress. And with that I yield back, and thank you again.

[The prepared statement of Mr. Tonko follows:]

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Mr. {Shimkus.} Gentleman yields back his time. Any other member seeking time for an opening statement? Seeing none, we would like to welcome Dr. Peter Grevatt from--he is the director of Office and Groundwater and Drinking Water at the United States Environmental Protection Agency. Welcome, sir. You have 5 minutes. We are not going to be draconian on time, and then we will go to questions. So, welcome.

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^STATEMENT OF DR. PETER GREVATT, DIRECTOR, OFFICE OF GROUND WATER AND DRINKING WATER, U.S. ENVIRONMENTAL PROTECTION AGENCY

} Mr. {Grevatt.} Yes, sir, thank you. Good morning, Chairman Shimkus, Ranking Member Tonko, and members of the subcommittee. Thank you for the opportunity to testify on EPA's activities to address harmful algal blooms and their impact on drinking water supplies. Today I will discuss the health effects of cyanobacteria and cyanotoxins, the incident in Toledo this summer, authorities under the Safe Drinking Water Act, and strategies for preventing harmful algal blooms.

Cyanobacteria are found naturally in surface waters, and can rapidly multiply, causing harmful blooms. Factors that enhance bloom formation include light intensity, nutrient availability, water temperature, and water column stability. Some species of cyanobacteria produce toxic compounds known as cyanotoxins. High levels of cyanotoxins in recreational waters, and drinking water, may cause a wide range of adverse

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health effects in humans, including fever, diarrhea, vomiting, and allergic reactions.

While the risk associated with low levels of cyanotoxins in drinking water is uncertain, the effects reported following exposure suggest that this is an important issue for us to address. Communities on Western Lake Erie, including Toledo, remain vulnerable to emergency shutdowns from harmful algal blooms.

On the morning of August 2, Toledo Mayor Collins issued a don't drink or boil advisory to the nearly 500,000 customers in response to the presence of microcystin in the city's drinking water, leading to the declaration of a state of emergency by the governor, and mobilization of the Ohio National Guard to provide emergency drinking water supplies.

The presence of the toxin was due to a harmful algal bloom near Toledo's intake on Lake Erie. The U.S. EPA performed sample analyses to confirm the concentrations of algal toxins, and worked with the State of Ohio and the City of Toledo to identify the optimal approach for controlling the toxins at the utility. When treatment adjustments led to the reduction on cyanotoxin concentrations, Mayor Collins

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lifted the advisory on Monday, August 4.

Currently there are no U.S. Federal regulations concerning cyanotoxins in drinking water. The Safe Drinking Water Act establishes a number of tools, including health advisories, the contaminant candidate list, and the Unregulated Contaminant Monitoring Rule to develop regulatory and non-regulatory approaches to addressing contaminants in drinking water. EPA is preparing health advisories for microcystin and cylindrospermopsin, two cyanotoxins commonly associated with harmful algal blooms.

The health advisories will establish concentrations of drinking water contaminants below which adverse health effects are not anticipated to occur, as well as provide states, and municipalities, and other local officials with technical guidance on sampling, analytical procedures, and drinking water treatment recommendations to protect public health. We expect to finalize these health advisories in 2015.

EPA's contaminant candidate list identifies unregulated contaminants that are known or anticipated to occur in public water systems which may require regulation. The EPA uses

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this list to prioritize research and data collection efforts. My office has listed several cyanobacteria and cyanotoxins on the three contaminant lists that have been developed.

EPA uses the unregulated contaminant monitoring rule to collect data for contaminants that do not have primary drinking water standards, and are suspected to be present in drinking water. A lack of standardized analytical methods for individual cyanotoxins has prevented EPA from including them in the current and previous rounds of the unregulated contaminant monitoring rule. The agency is currently developing specific analytical methods for microcystins, anatoxin-a, and cylindrospermopsin. EPA expects these methods to be available in 2015 in time to consider including several cyanotoxins in the fourth unregulated contaminant monitoring rule. Monitoring for the fourth round of UCMR will begin in 2018.

While monitoring and treatment are critical for providing safe drinking water, this year's incident in Toledo illustrates the difficulties of removing those contaminants at the treatment plant. Shortly after the Toledo incident, EPA redirected $12 million in Great Lakes Restoration

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Initiative funding to Federal and State agencies to strengthen ongoing efforts to target harmful algal blooms in Western Lake Erie. Continued source water protection efforts, and adequate investment in our nation's infrastructure, will be necessary to prevent events such as the one in Toledo in the future.

Once again, Chairman Shimkus, Ranking Member Tonko, and members of the subcommittee, thank you for the opportunity to discuss EPA's work on cyanotoxins in drinking water, and I look forward to answering any questions you may have.

[The prepared statement of Mr. Grevatt follows:]

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Mr. {Shimkus.} Thank you very much. First of all, I want to personally thank you for flying back, especially from--for today for the hearing in a town called New Orleans, so--New Orleans, D.C., 15 degrees versus whatever it was down there. We appreciate it.

So--then I will recognize myself for 5 minutes for the first round of questions. Could you please--and, you know, I kind of said some of this stuff in my opening statement, and you kind of reaffirmed this, just, for the record, how many cyanotoxins there are.

Mr. {Grevatt.} So there are many dozens of cyanotoxins. There are over 40 cyanobacteria that can produce cyanotoxins, and there are in the range of 80 forms of microcystins alone, so there are many dozens of different cyanotoxins.

Mr. {Shimkus.} So--and that was my next question. So there are over 80 microcystins?

Mr. {Grevatt.} Yes, sir.

Mr. {Shimkus.} Are all cyanobacteria harmful?

Mr. {Grevatt.} So cyanobacteria are capable--certainly some are capable of producing the toxins. It is the toxins

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that are released from the bacteria that are harmful. And we don't fully appreciate the specific conditions that lead cyanobacteria to generate these toxins, so, you know, they aren't necessarily always harmful in every condition, but certainly they are capable of producing very harmful compounds.

Mr. {Shimkus.} Do you know which cyanobacteria are harmful in a drinking water context?

Mr. {Grevatt.} So the ones that we have been most concerned about are microcystis, and then the cyanobacteria that also produce the anatoxin, the cylindrospermopsin, and the saxitoxin. The ones that we are focused on currently at EPA are the microcystin generated cyanobacteria, as well as cylindrospermopsins and the anatoxins.

Mr. {Shimkus.} Is there a threshold level of exposure of microcystin LR in drinking water at which the EPA has seen adverse human impacts?

Mr. {Grevatt.} So there is no threshold level yet that has been identified in humans. There has never been any testing in humans to identify what a threshold level might be. There certainly is the history with microcystins of--for

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example, in Brazil in the '90s, there was a kidney dialysis center that microcystins in their system that led to 50 deaths as a result of that treatment. So we know that microcystins can, in certain circumstances, produce high toxicity in humans. We don't know specifically what a threshold level would be.

Part of what our health advisory effort is designed to do is to help identify a level below which we think exposure would be safe.

Mr. {Shimkus.} And that Brazil case, was that over time, or was it, like, identified, and then those deaths occurred rapidly? Was that over time?

Mr. {Grevatt.} So I would have to get back to you on the specifics of that case. All that I know is that that clearly was defined as microcystin leading to 50 deaths. And that was, of course, intravenous exposure, and at much higher levels than what we might see--

Mr. {Shimkus.} Right.

Mr. {Grevatt.} --in drinking water, but it tells us, at least, this is a dangerous compound for humans.

Mr. {Shimkus.} Right. Thank you. Many people have

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been using the terms like health advisory and standard interchangeably, but I am not sure that they are. So are these terms defined in the Safe Drinking Water Act?

Mr. {Grevatt.} Yes, these terms are defined in the Safe Drinking Water Act. The health advisories were introduced in the 1996 amendments to the Act. These are non-regulatory levels, right, and they are really guidance values to help states and communities to guide their steps they might take in response to the presence of contaminant in drinking water. A standard, of course, is a regulatory value that drinking water systems must meet.

Mr. {Shimkus.} Thank you. When EPA issues a health advisory, what types of information does it address, and what level of detail?

Mr. {Grevatt.} Right. So there are several pieces of the health advisory that will--pieces of information that will be included. The first is discussing the environmental properties of the compound the health advisory is focused on. The second is identifying sampling and analytical techniques that are available for that compound. The third is identifying the safe level for that compound. Then the last,

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very important, piece is identifying treatment technologies that are available to remove that compound from drinking water systems.

Mr. {Shimkus.} Yeah, and that is what my follow-up was--my follow-up was do you recommend testing methods in these? And you did talk about treatment a little bit.

Mr. {Grevatt.} Right. So we are currently in the process of developing a new analytical method for microcystin, and cylindrospermopsin, and anatoxin. And so these methods will help us to be able to define specifically much lower levels of these toxins in drinking water. You are probably aware that many systems in states across the country currently use a screening level method known as the Elisa Method. That is certainly what was used in Toledo, and by the State of Ohio. It is a very useful method. The one we are developing is going to be very specific for individual microsystem--

Mr. {Shimkus.} Thank you very much. I yield back the remainder of my time, and turn my--Ranking Member Mr. Tonko for 5 minutes.

Mr. {Tonko.} Thank you, Mr. Chair. Doctor, we have

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heard today about actions that can be taken to address harmful algal blooms in the short and long term. Some may believe that the solution to this drinking water problem is a standard for microcystin, the toxin released by these organisms. But that would require water utilities to treat the symptom of harmful algal blooms, instead of addressing the underlying root causes. One tool for addressing these causes that cannot be overlooked is the regulation of nutrient pollution.

Excessive amounts of nitrogen and phosphorous in water sources from agricultural storm water and waste water runoff fuel rapid algal growth. Algae's rapid reproduction outpaces that of other organisms, overtaking entire ecosystems. When they die, sink to the bottom, and decompose, an oxygen-free dead zone, as you know, is the result.

So, Dr. Grevatt, how are elevated nutrient levels in water sources like Lake Erie contributing to harmful algal blooms and toxic contamination of our water sources?

Mr. {Grevatt.} Thank you. So we understand clearly that there are several factors that contribute to the growth of harmful algal blooms, certainly one of those is nutrients,

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and we believe that a solution to this problem requires attention both on source water protection, as well as infrastructure in the drinking water treatment facilities, that without both of those steps it would be very difficult to manage this problem.

Mr. {Tonko.} And what authority does your office have under the Safe Drinking Water Act and the Clean Water Act to prevent non-point source nutrient pollution from entering our drinking water sources?

Mr. {Grevatt.} Right. So, under the Safe Drinking Water Act, which my office is solely responsible for implementing, there is a requirement for states to produce source water assessments, which was completed. This was in the 1996 amendments. Every state has completed this task. There are no further requirements for source water protection, but certainly we encourage states and local communities to work together to address the sources of pollution that can create these sorts of problems in drinking water supplies.

Clean Water Act is not an authority that my office implements, but certainly there are a number of provisions

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focusing on issues like non-point source pollution. We have the 319 grants, and a number of other activities that we have been advancing, along with partners at the Federal level to address sources pollution.

Mr. {Tonko.} And, in your view, is it important to address nutrient pollution in addition to addressing the cyanotoxins in drinking water?

Mr. {Grevatt.} Without question. I think it would be very difficult. If we don't do that, what will happen is that we are putting all the burden on the drinking water systems to remove the toxins from the source water, and we saw in the case of Toledo that that can be a difficult thing to achieve. And so we believe it is important to address both the sources that are contributing to the growth of the algal blooms, as well as making sure that the treatment systems are up to the very tip-top shape so they can remove these pollutants from the drinking water.

Mr. {Tonko.} And the treatment systems are available, or do they need to be further developed?

Mr. {Grevatt.} So the treatment systems are--treatment techniques are available to remove algal toxins and

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cyanobacteria from drinking water supplies, but it is not necessarily a simple and straightforward task. And so that is part of the reason why we think we really have to address both issues--

Mr. {Tonko.} Um-hum.

Mr. {Grevatt.} --currently.

Mr. {Tonko.} And is drinking water contamination the only problem associated with these blooms?

Mr. {Grevatt.} So there are a number of issues. I think you are--not many of you are familiar with concerns associated with recreational use of water, so--children and families at bathing beaches, if there are harmful algal blooms, can be exposed, and, in some cases, sickened by those blooms. Certainly we see issues with livestock and pets who have been poisoned as a result of harmful algal blooms. And as well, as you mentioned, the blooms can contribute to hypoxic situations in lakes and reservoirs, and that can create an whole other set of issues that are separate from the drinking water concerns.

Mr. {Tonko.} Another important tool is to ensure adequate protections for seasonal streams, wetlands, and

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other water with significant connections to downstream waters. The regulatory statue of these waters--the regulatory of these waters under the Clean Water Act is often misunderstood. EPA and the United States Army Corps of Engineers recently proposed to clarify the definition of waters of the United States under the Clean Water Act to eliminate confusion, and ensure that these waters are protected.

The recent report that I cited earlier included a recommendation to restore wetland areas, and increase them by 10 percent, and the Western Lake Erie Basin is one of the ways to address algal blooms in the lake. What is the function of these small streams, wetlands, and other water bodies, and why are they important to our ecosystem?

Mr. {Grevatt.} Right. Thank you. So, I want to be clear, again, that my office doesn't implement the Clean Water Act, but certainly it is the case that it is very difficult to protect a body of water like Lake Erie without addressing the pollutants that are flowing into the water from other streams and rivers, and so I think it is a very important issue to think about comprehensively.

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Mr. {Tonko.} Thank you. With that, I yield back, Mr. Chair.

Mr. {Shimkus.} Gentleman yields back his time. Chair now recognizes the gentleman from Ohio, Mr. Latta, for 5 minutes.

Mr. {Latta.} Well, thank you very much, Mr. Chairman, I really appreciate it. And, Director, again, thank you again for being here. And, again, as the Chairman said, thanks very much for coming back from New Orleans to be with us today to be at the subcommittee hearing, because it is very important to our region of the state, but also, you know, what is going to come out of your office in the near future is important to everyone.

And as we look at the, you know, the--how obviously important it is that we understand the extent of the problem that we have, and I know I really appreciated the opportunity to sit down with you earlier this fall to go through what had happened, and also some of the issues that you are facing on peer review in getting that information together, what do you believe today are the largest gaps that we have in the health effects on the cyanotoxins are, and those gaps?

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Mr. {Grevatt.} Right, thank you. So there are a number of different cyanotoxins, as I mentioned. There are some that we understand much better than others. Perhaps the best studied is the microcystin cyanotoxin that was the issue within the City of Toledo drinking water system. And that is one of the health advisories that we will be developing, along with cylindrospermopsin.

Probably the largest data gaps we have, in terms of toxicity, is the effects at very low levels of exposure. So there are a number of studies that have been generated in animals that look at issues like liver toxicity, and reproductive toxicity associated with microcystin exposure, but those studies aren't perfect. We had been, as I mentioned, generating a health advisory for microcystin, and we have subjected that draft health advisory to two rounds of independent external peer review, and we are using the feedback from the peer reviewers to make sure that we are taking the best approaches to incorporate the information from these studies, and the health advisory. And we will have that health advisory available in the spring of next year.

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Mr. {Latta.} You know, when you are talking about the--on a peer review, and maybe--as we talked earlier. Could you go into just a little bit about--it is kind of difficult because of the technical nature of this, and the expertise that is required, and the folks that you have to find to be able to conduct this peer review?

Mr. {Grevatt.} That is right. So what we will typically do at EPA--when I say independent external, what I mean by that is we will hire a contractor to identify scientists who are not connected with the agency to review our work and give us feedback independent of us. We don't choose the scientists who review our work. They give us the feedback, and then we look at how we interpret and incorporate their advice on how we finalize these health advisories.

But we are looking at studies, typically in animals, and we have to try and understand what those studies tell us about the potential risks for humans. And that is part of the reason why it is so important to have the peer review, to have the advice about how best to do that.

Mr. {Latta.} Okay. And as we know, that Ohio, and some

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of the other states, if I am not mistaken from our conversation, only about six other states are out there that are using surface water, or have some type of a standard in place, and we are using, you know, how--the World Health Organization standard. And, you know, when you are looking at your health advisory that you are working on for next year releasing, when was it that you all first decided at EPA that you needed to really have that standard in place?

Mr. {Grevatt.} We decided that we needed to put a health advisory in place well before the Toledo incident, so we have been working on this throughout the last year, and even before. And we are working closely with Health Canada and a number of states in this effort to make sure that we are using the best available data in the best way.

Mr. {Latta.} And when you are talking about that is--in the last year, when did you--when you started looking at that, was there a reason that you hadn't started working on it sooner, or is it something that has just been coming up? Or what was the reasoning behind that?

Mr. {Grevatt.} Right. It is an excellent question, and there are two issues that have been challenging related to

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cyanotoxins. One has been the absence of analytical methods that are specific for individual cyanotoxins. And you remember I mentioned there are over 80 conjurers of microcystin that have different levels of toxicity. And the second is that the data set on toxicity has not been all that robust.

There have been some additional studies that have been generated, and, in fact, the World Health Organization value, which about 12 countries around the world use today, and a number of states use, that is based on a 1999 study, and it is a 2003 guidance value that was generated, and so we felt it was important to update that science. I think we have heard from you, and many of your colleagues, about how important it is to have a Federal health advisory in place, rather than relying on something from the World Health Organization.

Mr. {Latta.} And in my remaining time, would that also include--an advisory, would that also--for--would EPA issue for other separate types of algal--or not algal blooms, but algal toxins? Would there be one, or would you have several different types of advisories that you would have out there?

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Mr. {Grevatt.} We will have two health advisories, one for microcystin, and a second for cylindrospermopsin. Those are the two that we are focused on right now. So there will be two documents that will come out. They will both include information on health effects, treatment technologies, and analytical procedures for sampling these compounds.

Mr. {Latta.} Okay. Well, thank you very much, and, again, thank you very much for being here. And, Mr. Chairman, I yield back the balance of my time.

Mr. {Shimkus.} Gentleman's time has expired. Chair now recognizes the gentleman from West Virginia, Mr. McKinley, for 5 minutes.

Mr. {McKinley.} Thank you, Mr. Chairman, and thank you for--Congressman Latta for bringing this to our attention. I don't think 5 minutes is going to be enough for me, but let me see where we can go with this.

Why Lake Erie? Is this--what made it unique? Because the same toxins, or same nutrients are coming into the water in Superior and Lake Michigan. Why--the--and is--am I accurate--I was told that the--they--they are doing dredging near the port in Toledo. So I didn't hear that come up as a

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possibility of something that could be contributing, because you would have nutrients absorbed into the sediment that would be disturbed. Do you consider that possibly part of the uniqueness of why western Erie was a factor?

Mr. {Grevatt.} Thank you. So clearly there are a number of issues that contribute to the growth of harmful algal blooms. We understand that nutrients are a very important factor. We also understand that the warmth of the water is an important factor. Availability of light is an important factor. And these issues come together in western Lake Erie, being a very shallow area, one of the most shallow areas of the Great Lakes, that has large nutrient inflows, as well as having very warm water temperatures. And also relatively stable water, without a whole lot of flows, can also contribute. And so that is--all those factors are present within western Lake Erie.

We should be clear that there are many, many lakes and reservoirs across the United States that are being impacted by harmful algal blooms today, and many states across the U.S. that have similar factors of nutrient in--

Mr. {McKinley.} But what about--

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Mr. {Grevatt.} --shallow water.

Mr. {McKinley.} --the dredging? Could that be--how do you take that into consideration?

Mr. {McKinley.} Thank you. So certainly there are a lot of nutrients in the Lake Erie system today. Some of those are contained within the dredge spoils, and there are some who believe that the dredging may be a contributing factor, if they are releasing nutrients into the water column, and also supporting, then, the growth of the algae.

Mr. {McKinley.} What about the zebra mussel that was introduced? I understand that also potentially has a contributing factor.

Mr. {Grevatt.} That is an excellent question, and a number of my colleagues within the Great Lakes states are focused on issues, including invasive species. The thinking that some have shared is that zebra mussels may contribute to the growth of harmful algal blooms, cyanobacteria, by essentially competitively eliminating the native species of algae, and giving the cyanobacteria a greater opportunity to use the nutrients that are available to grow and create blooms.

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Mr. {McKinley.} All right. So--and then go back down to the fundamental, it sounds like we are reacting, rather than anticipatory. How are they testing for this? Is there just--under the normal water treatment, does it remove the bacteria, and someone--some--something showed up on a test that was unique that--after the fact that we had been using this water for some time? How would--how did that--does our conventional treatment take care of this problem?

Mr. {Grevatt.} Our conventional treatment technologies can take care of the problem, but it is not a simple task to do, you know, so there are issues. For example, the microsystems, the toxins, are frequently found within the cells, the cyanobacteria cells. If one inadvertently breaks open the cells in the treatment technology, they can actually make the problem worse. So it is not a simple task to remove the cyanotoxins from drinking water with standard treatment techniques.

Harmful algal blooms are not a new problem. They are a problem that was present even decades ago, when I was growing in Cleveland, on Lake Erie. There were issues with harmful algal blooms on the lake at that time, in the 1960s. We made

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progress, and we see them now coming back for reasons that we may not fully understand, all the different factors that are contributing to that.

One of the activities that we put in place at EPA over the last several years was a national lakes assessment that characterized the conditions of the nation's lakes and reservoirs, and that assessment sampled for cyanobacteria and for microcystin, and helped to identify the extent of the problem across the U.S., and I think contributed, in some ways, to the awareness of some states, like the State of Ohio and others, to the issues that need to be addressed.

Mr. {McKinley.} Okay, but that just--there are a lot of communities--I don't want to look at the Toledos, and the Clevelands, and the Bostons, and--but what about the small communities, or rural America? How do--are they going to be equipped to be able to do the same water testing that Cleveland does, or St. Louis?

Mr. {Grevatt.} This is a really important--a very important issue, and you may be aware that, not in 2014, but in 2013 Carroll Township, a community of 4,000 on western Lake Erie, shut down for several days as a result of algal

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toxins within their system. Carroll Township was able to hook up to a neighboring community to get pure water provided to their customers, but that may not always be the case. And you are right that that is going to be a significant challenge for small communities.

Within our program, our State Drinking Water Revolving Loan Fund is focused on providing resources especially to small communities. So we provide resources to small, medium, and large communities, but especially focused on small communities to help them address these sorts of issues.

Mr. {McKinley.} Okay. I have run over my time. Thank you very much.

Mr. {Shimkus.} Thank you, and I also want to highlight this. You work with the State Revolving Loan Fund. I have got a large rural area, and that has been a very successful program. It has been very helpful to my community, so--seeing--is there any other questions from colleagues present? Seeing none, again, we want to thank you for making your trip back. This is an important issue. We want to keep our eye on it, and work with everything, and stakeholders, to try to make sure that we can do what is in the best interest to

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protect the water supply for our constituents and our citizens. So thank you very much, and with that, I will dismiss the first panel, and we will empanel the second one.

And we want to welcome, as the second panel--in the order at the table, we will have--we have the Honorable Craig Butler, who is director of Ohio Environmental Protection Agency. We have Mr. John Donahue, general manager at North Park Illinois Public Water District, on behalf of the American Water Works Association. And last, but not least, Ms. Lynn Thorp, national campaigns director of the Clean Water Action. Welcome.

Your full statements will be submitted for the record. You will have 5 minutes. It is a--as you see, it is kind of a laid back day, so we are not going to be, again, brutal on time, but if we can get to questions eventually, that would be great. And I also want to thank--Mr. Grevatt is still sitting here, which I think is very important, and thank you for attending for a little bit longer.

So with that, Mr. Butler, you are recognized for 5 minutes.

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^STATEMENTS OF THE HONORABLE CRAIG W. BUTLER, DIRECTOR, OHIO ENVIRONMENTAL PROTECTION AGENCY; JOHN DONAHUE, GENERAL MANAGER, NORTH PARK (IL) PUBLIC WATER DISTRICT, ON BEHALF OF AMERICAN WATER WORKS ASSOCIATION; AND LYNN THORP, NATIONAL CAMPAIGNS DIRECTOR, CLEAN WATER ACTION

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^STATEMENT OF CRAIG W. BUTLER

} Mr. {Butler.} Good morning, Mr. Chairman, Ranking Member Tonko, rest of the members of the committee, Representative Latta also for the invitation today. We appreciate it. I am Craig Butler, Director of Ohio EPA, and the Environmental Protection Agency, we appreciate the opportunity to offer testimony on the important subject of cyanotoxins, or harmful algal blooms, or sometimes we call them HABs, in our drinking water. The importance of this hearing, as we have heard today, cannot be highlighted more by the events of early August in Toledo, when nearly 500,000 people were told not to drink the water due to presence of microcystin in public drinking water above an acceptable

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level. Recommending the issuance of this was not taken lightly, given the significance of the social and economic impact. But in consultation with experts on my staff, a decision had to be made to protect public health, and was based on the best science available.

Ensuring that Ohio's 4,500 public water systems provide safe drinking water is one of the most important responsibilities I have as director at Ohio EPA. This includes 125 systems using surface water, several of which draw their water directly from Lake Erie. To do this, Ohio implements and enforces drinking water standards and regulations established by U.S. EPA. I believe U.S. EPA's general regulatory approach is very robust, results in scientifically defensible and feasible regulation.

In dealing HABs in Ohio drinking water supplies, we had to short circuit this rigorous regulatory process out of necessity. For example, in 2010, largely responsible to a significant harmful algal bloom in Grand Lake St. Mary's in Western Central Ohio, the state established a strategy to identify and respond to the presence of toxins in water being used for recreation, and as a source of public drinking

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water. Ohio has established sampling and analytical protocols, and also public health advisory levels, for several of the most commonly identified toxins. And while we worked with U.S. EPA on many of these issues, Ohio realized we would need to lead the nation in many respects, and have to go it alone, if you will, since a national regulatory testing framework was not completed at that time.

With the technical assistance of U.S. EPA since, and the Office of Water, and the Office of Research and Development, which is located in Ohio, we are pleased, and have been able to work with Toledo to ensure that their treatment plant was again operating properly, and able to provide Toledoans with safe drinking water.

One of our lessons learned, if you will, and one of the very first of many steps we took to combat harmful algal blooms after the event in Toledo was to immediately make $1 million available in grant funds for cyanobacteria testing equipment to communities so water systems across the state could, and can, conduct their own monitoring for the presence of HABs. We believe this will enable them to more closely monitor the source water for algal blooms, and rapidly

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respond with any necessary treatment and adjustments.

We also made $50 million available through zero interest loans for enhanced water treatment and infrastructure, and backup water sources at public water systems. And while not directly related to drinking water, we also, at that time, made $100 million available to our wastewater treatment systems across the state to help manage the issues about nutrients being discharged from their waste treatment systems.

Ohio EPA continues to coordinate with U.S. EPA regarding the health advisory we spoke of--heard Dr. Grevatt speak of this morning about levels expected to be issues--issued by the U.S. EPA next spring, as well as the analytical methodologies, and the effectiveness of various treatment processes. We know they have accelerated this work, and we applaud their efforts to provide more guidance to states. We have also been coordinating with other states through the Association of State Drinking Water Administrators, and concur with the comments contained in ASDWA's November 14, 2014 letter to this subcommittee.

Ohio EPA has been active in addressing HAB and drinking

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water sources, but as I can tell you, these issues are very complex. Many other states under similar circumstances, although only about six have identified health advisory levels. Those levels are different, and based on a small set of data and information about HABs. It is my belief that the country would benefit from having a national dialogue, and establishing a consistent set of national standards for all to follow.

Specific elements of the national approach should include a robust assessment of the health effects, and recommended health advisory levels not only for microcystin, but also for other variants of microcystin, as well as other common cyanotoxin. Second, standard analytical methods that are reliable and selective, but also affordable, guidance on the appropriate frequency of monitoring. Additional information on the ecology of cyanobacteria, and more guidance on the reliable treatment approach are necessary.

In the long term, however, we believe that the best approach is to protect public water supplies through a source water protection plan, as well as preventing blooms via data driven targeted strategies to address nutrient pollution from

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not only agriculture, but other point sources, non-point sources, and other sources in general. As we are putting-- and we are putting that into place in Ohio today. With the support of significant funding through the GLRI, or the Great Lakes Restoration Initiative, we have developed a coordinated strategy with the State's Department of Agriculture, Natural Resources, EPA, and Health to develop prescriptions for watersheds in the Lake Erie Basin to address nutrient pollution, based on data we have available.

In summary, EPA takes very seriously the quality of water--drinking water supplied to our public water systems. Ohio has taken many proactive steps to address the issue. It is our strong belief that state and Federal leaders need to work closely together to quickly advance the science of detection and effective treatment. We stand ready in the State of Ohio to continue to lead in this effort, and we will gladly work with other states. I appreciate the opportunity to offer this testimony to the committee, and would be pleased to respond and answer any questions.

[The prepared statement of Mr. Butler follows:]

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Mr. {Shimkus.} Thank you very much. I would like to recognize Mr. John Donahue. Sir, again, you are recognized for 5 minutes.

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^STATEMENT OF JOHN DONAHUE

} Mr. {Donahue.} Good morning, Chairman Shimkus, and members of the subcommittee. My name is John Donahue, and I am the Chief Executive Officer of the North Park Public Water District based in Machesney Park, Illinois. I deeply appreciate this opportunity to offer input on the critical issues surrounding algal bloom, cyanotoxins, and our nation's sources of drinking water. I am here today on behalf of the American Water Works Association, which I serve as president. My remarks reflect the experiences and perspective of AWWA's nearly 50,000 members. Established in 1881, AWWA is the world's oldest and largest non-profit scientific and educational association dedicated to water. Our utility members provide safe and affordable water every day to more than 70 percent of the American population.

As you know, last August an algal bloom in western Lake Erie resulted in the formation of a toxin known as microcystin, requiring the City of Toledo to issue a Do Not Drink Advisory that affected more than 400,000 people. The

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formation of algal toxins is very complex, and not fully understood. The same can be said for their possible human health effects. But one thing is certain, this problem is always associated with excessive amounts of nitrogen and phosphorus in water.

According to the U.S. Geological Survey, non-point sources, predominantly runoff and air deposition, account for 90 percent of the nitrogen and 75 percent of the phosphorous in our waterways. The fairest and best strategy for reducing the scope and severity of this problem in the future is bringing non-point sources of nutrient pollution under more effective management. At present, though, these sources lie largely outside the jurisdiction of the Clean Water Act.

There are some Federal programs that do have a bearing on nutrients in our water, such as the conservation title of the Farm Bill. However, these conservation programs are voluntary in nature, in contrast to the clean water permit programs, and they are not based upon the quality of receiving waters, nor do they reflect the need to protect downstream sources of drinking water.

Now, drinking water treatment technology does exist to

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allow drinking water utilities to remove toxins produced by algal blooms, however, this technology is very expensive to acquire and maintain. In addition, removing these toxins after they occur does nothing to protect the ecosystem, and the people within the watershed. As a utility manager, the protection of public health is always my most important priority, and the same is true for the American Water Works Association.

Even before this summer's events, AWWA had taken steps to help water systems at risk from algal events. These include developing and distributing information to assist water systems, and anticipating and responding to source water challenges, including cyanobacterial blooms and cyanotoxins, prepare a water utility manager's guide to cyanotoxins, which is now in its final review, encouraging water systems to evaluate their circumstances to determine whether they might have unrecognized cyanotoxin concern, and to establish appropriate safeguards, and assisting water systems with guidance and training in emergency preparedness so that they have protocols in place to respond to events like that experienced in Toledo.

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Having said those things, utility managers can't solve this problem on their own. We need Federal help. Federal agencies, including U.S. EPA, USDA, should include existing authorities to give much higher priority to nutrient reduction projects that protect downstream drinking water supplies. For example, the Clean Water State Revolving Loan Fund and Farm Bill conservation programs could be targeted and used more effectively to reduce nutrient pollution, and protect drinking water sources.

With regard to drinking water regulation, we support the science-based standard setting process in the Safe Drinking Water Act. EPA has indicated it will use the unregulated contaminant monitoring rule process as the first step in determining whether the regulation of cyanotoxins affords a meaningful opportunity to protect public health, and we support that step.

Finally, and perhaps most important, we ask that Congress consider ways to increase the effectiveness of non-point source pollution programs. This should include discussing the question of whether non-point pollution should be brought under the jurisdiction of the Clean Water Act in

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an appropriate way. It would not be equitable to put an increasing burden on water systems and their customers to solve this problem if the most significant sources of nutrient pollution are not also asked to do more.

In closing, I want to thank the subcommittee for the leadership that it is taking today in holding this hearing, and I will be happy to answer any questions you may have, either today or in the future. Thank you.

[The prepared statement of Mr. Donahue follows:]

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Mr. {Shimkus.} Thank you very much. Now I would like to turn to Ms. Lynn Thorp, and you are recognized for 5 minutes.

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^STATEMENT OF LYNN THORP

} Ms. {Thorp.} Thank you, Chairman Shimkus, Ranking Member Tonko, and members of the subcommittee. My name is Lynn Thorp. I am the National Campaigns Director for Clean Water Action. We are a national organization working in 15 states on a wide range of issues, including Safe Drinking Water Act implementation, and protecting drinking water sources. Clean Water Action urges the committee to support aggressive action to reduce the nitrogen and phosphorous or nutrient pollution that cause harmful algal blooms, which in turn produce cyanotoxins. To address cyanotoxins only through drinking water regulation and treatment is inadequate, and transfers the burden of pollution control to water systems and their consumers. Sources of nutrient pollution, as we have heard, include agriculture practice, storm water, sewer and septic systems, and fossil fuel use in various sectors. Population growth and climate change exacerbate the problem.

As we have heard, some cyanotoxins produced by certain

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harmful algal blooms cause liver damage, nerve damage, and skin damage. Excessive nutrients contribute to the growth of these harmful algal blooms. But this pollution causes other drinking problems as well. The development of nitrate, development of increased disinfection byproducts, all of these lead to increased public health risks in drinking water, and costs for consumers. Nitrogen and phosphorous also cause other environmental problems, including dead zones and impaired water quality, and we know that nutrient pollution causes demonstrated economic losses in fishing, recreation, and water dependent businesses.

EPA and some states have taken expeditious action to address cyanotoxins in drinking water. As we have heard, EPA has placed three cyanotoxins on the contaminant candidate list, an important Safe Drinking Water Act implementation step that will lead to the research we need to learn more and move on the path toward regulation. EPA is also conducting toxicity and human health assessments, developing drinking water health levels, and also developing laboratory methods so that we can measure cyanotoxins consistently.

I want to note that EPA and states are conducting these

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activities in the face of stagnant and shrinking budgets, and possibly inadequate capacity to implement the Safe Drinking Water Act, and to reduce drinking water threats as aggressively as the public expects. EPA has the authority, under our nation's other landmark water law, the Clean Water Act, to address nutrient pollution from all sources. Despite the agriculture exemptions in the Clean Water Act, progress can be made on addressing a significant source.

There are other immediate opportunities, as we have heard, for EPA to help reduce nitrogen and phosphorous pollution. The proposed definition of waters of the United States under the Clean Water Act, which clarifies the protection of streams, wetlands, and other waters, is a good example. These water bodies are a vital part of our water infrastructure because they filter pollution, including nutrients, before it makes its way to downstream water bodies, often which service drinking water sources.

In an upcoming Clean Water Act rulemaking limiting toxic water discharges from power plants, EPA has an opportunity to address 30 million pounds of nitrogen, and 682,000 pounds of phosphorous discharged by power plants annually into surface

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water. As noted here earlier today, other Federal agencies, including the USDA and states, can take significant action to address nutrient pollution. Innovative partnerships can also play a role. For example, the Source Water Collaborative is made up of diverse stakeholders, including regulators, drinking water utilities, planners, and environmental organizations working together to advance drinking water source protection at the local, state, and Federal levels.

The Safe Drinking Water Act's multi-barrier approach starts with source water protection. Clean Water Action likes to say we should put drinking water first, which means making decisions about upstream activities with a focus on preventing drinking water impacts downstream. This results in better choices, which prevent other environmental and economic impacts. This is certainly true when it comes to nutrient pollution. Curbing nitrogen and phosphorous inputs is the right choice for drinking water protection, and is the multi-benefit approach.

[The prepared statement of Ms. Thorp follows:]

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Mr. {Shimkus.} Gentlelady yields back her time, and thank you very much. I will now recognize myself for 5 minutes for my round of questioning.

First, to Director Butler, which stage would you say we are in right now on the state of the science of microcystin, particularly as it relates to health effects?

Mr. {Butler.} Thank you, Mr. Chairman. Just recognize that I am not a scientist, like Dr. Grevatt, but--so I will give you my layman's understanding of it. So I would say that the--a lot of work has been done, much more is needed, and I think much more quickly than has been advanced in the past, so that is why we have applauded Dr. Grevatt and U.S. EPA Research and Development office for accelerating the research about the health advisory levels for microcystin.

We understand, and as you heard this morning, there are many different variants of microcystin, many different types of cyanobacteria that, frankly, we know very little, if not anything, about. Not just in terms of the nature of those, but also of the potential toxicity of those. So as we applaud the work that is advancing currently, we also would

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recommend, and not want to lose sight of the fact that there are many other variants of microcystin and cyanobacterias that are not being studied that need additional study.

Mr. {Shimkus.} And it is to no one's surprise that I am from one of the largest agricultural districts in the nation, and I know that good stewardship is important to them, filter strips, and now with incoming technology, the ability to really--I think a lot of people have a perspective that this stuff just gets sprayed, to the point where it just runs off. And new technology is available where they are going to be implementing either the herbicide, or the fertilizer, like, right--almost specifically right upon the seed. So have you had discussions with the agricultural community in--some of these issues in dealing with the State of Ohio?

Mr. {Butler.} Yes, Mr. Chairman. I think--one thing I just wanted to make clear, as we--since 2010, through Toledo, and then continuing, this has been an issue that Governor Kasich has been active in, and we all have been. As I mentioned, we have a very close partnership with Departments of Agriculture and Natural Resources through the non-point source programs in Ohio, as well as Ohio EPA and the

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Department of Health, so we have continued to meet and work aggressively on this.

One of the things that we had been working with is with the agricultural community, the Farm Bureau in Ohio and the agribusiness. They have some--implemented some programs. They have a healthy water initiative through the Farm Bureau, where they are doing a 20 to 30 year assessment. They have also invested several million dollars about--doing edge of field research, looking at transport of nutrients off of the fields and how that happens. We have recently been working with--through the monies that we received through the Great Lakes Restoration Initiative, we have been working to implement several programs of--in the ag community, including cover crops, making grants available for farmers to do cover crops.

But as you mentioned, the prescription application, the prescriptive--very precise, targeted implementation, we know that, much like no-till farming was many years ago, that equipment was very expensive. Farmers weren't used to--know how to use it. I think we are in that same phase now. There is very expensive equipment that farmers can use to be very

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targeted in the application of fertilizer through GPS, other technologies, and think they are very willing to use it. It is just, how do we train them to do that, and then help them purchase the equipment to do it?

Mr. {Shimkus.} And I think one of the aspects will be immeasurable. How do you measure the success of the new techniques, and new farm activities, and get, you know, credit for the great work that is being done in that area?

Mr. Donahue, cyanobacteria blooms, as I understand them, are not a new problem. To what do you attribute more frequently observation and reporting in most recent years?

Mr. {Donahue.} Thank you, Mr. Chairman. I would say that for public water systems, you know, we do see more frequency in these algal blooms in our receiving streams. Many more public water supplies are using surface water supplies as their source of drinking water, especially in the Midwest, as we have seen groundwater systems be depleted.

Certainly the increase in nutrient runoff has had an impact on our--the quality of our source water, and, from that perspective, I think a relationship, or a partnership between the Safe Drinking Water Act and the Clean Water Act,

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in order to help us better understand how those--how that bacteria occurs in the receiving streams, and, ultimately, what we can do to prevent it from getting into our drinking water supply is something we should be looking at.

Mr. {Shimkus.} Thank you. There have been a lot of concerns coming out of the Toledo experience on monitoring and testing procedures and equipment. Could you please speak to the feasibility and reliability of the available methods for detection and treatment, and also speak to the viability of--and the affordability of these?

Mr. {Donahue.} As far as the analytical processes, I am not an expert in the analytical procedures. I do know that there is some additional work needing to be done, as far as standard method for the analysis of drinking water for cyanobacteria. Regarding the cost for public water supplies, certainly drinking water is an undervalued commodity today. We spend a lot of money--we--our customers believe that they have a--the cost of their water supply--

Mr. {Shimkus.} You are choosing your words carefully.

Mr. {Donahue.} I am trying to. So water is undervalued to the point where somebody would pay $2.50 for a cup of

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Starbucks coffee, but they might squawk at paying the same amount of money for a 1,000 gallons of safe drinking water delivered right to their tap. So could some public water supplies afford to increase their rates? Perhaps. But our position is that, in this case, it would be a bit unfair to put all of the burden on the public water supplies in this case without looking at the sources of the cyanobacteria in the first place.

Mr. {Shimkus.} Thank you. My time is far expired, and I apologize. Now turn to the Ranking Member, Mr. Tonko, for 5 minutes.

Mr. {Tonko.} Thank you, Mr. Chair. Mr. Donahue, you indicated in your testimony that tackling this problem at the treatment plant is not sufficient. Does the American Water Works Association support efforts to protect source water by eliminating nutrient impact--inputs to drinking water sources?

Mr. {Donahue.} We absolutely support anything that can be done to prevent these nutrients from running off into our receiving waters. I think what I said in my testimony, though, is that the treatment processes are available that

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could remove cyanobacteria from the drinking water, but they are very expensive to acquire and maintain. Requiring communities to purchase advance drinking water technology and implement it without doing something at the source water level, we believe, would be a bit unfair.

Mr. {Tonko.} Um-hum. And what are the costs to water utilities to adequately treat water to remove toxins from the algal blooms?

Mr. {Donahue.} I don't have that information available to me this morning, but we would be happy to provide you with that at a future date.

Mr. {Tonko.} And we have heard that small and seasonal streams and wetlands play a critical role in source water protection. That is the goal of the EPA/U.S. Army Corps proposal, to clarify the definition of waters of the U.S. Ms. Thorp, is the protection of these upstream waters and wetlands important for pollution reduction and to control harmful algal blooms?

Ms. {Thorp.} Thank you, Ranking Member Tonko. Yes, indeed, it is. EPA has found, in its scientific analysis accompanying the proposed definition, that streams and

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wetlands play a critical role in nutrient reduction. In fact, they used--I believe the found the--scientific literature over the last several decades replete with evidence of this pollution filtering role.

Mr. {Tonko.} Um-hum. And according to EPA, drinking water for over 117 million people comes from public water systems that rely, to some degree, on seasonal streams. And so, Ms. Thorp, if we do not protect the feeder creeks and upstream waters, is there an impact on drinking water quality for these communities?

Ms. {Thorp.} Thank you. Yes, sir, we think so, and we think that number is a low estimate, because that was based on an analysis only of headwater streams and the public water systems that serve what--about a third of our population. But, of course, the impact of streams and wetlands, and their role in filtering pollution, including nutrient pollution, is much broader than that. It includes many people relying on private wells, for example.

Mr. {Tonko.} Um-hum. And, Mr. Donahue, if we don't do more to protect source waters, what does that mean for water utilities and their customers?

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Mr. {Donahue.} Well, certainly that if we don't do something to remove nutrients from source water before it gets to the drinking water treatment plant, treatment facilities will have no choice but to impose treatment techniques that would remove those potential contaminants. Our first priority is to protect public health, and if we can't control that on the source side, then drinking water utilities will have no alternative but to increase their treatment capability, and the cost associated with that would be transferred to our customers.

Mr. {Tonko.} You know, I hear about the seriousness of this issue, and the toxicity that impacts society in general. Hear about the--perhaps the misunderstood status of the regulatory opportunities under the Clean Water Act. We are also compounding the situation with climate change, a science that oftentimes is ignored.

Some of the predictions for climate change impacts are far--for far more extreme weather events, and altered weather patterns. This might include more intense rainfall events, which--obviously cause for additional washing of these nutrients into the system of toxic elements, warmer summers,

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higher temperatures obviously being an impact here, longer droughts, for example. Ms. Thorp, what impact would these changes have on harmful algal blooms?

Ms. {Thorp.} Thank you, sir. I think a number of impacts of extreme weather events and warming temperatures can affect the problems we are talking about here. One example is that the growth of harmful algal blooms, and, in fact, all algal blooms, is not completely understood, as we have heard earlier today, but we know that warming temperatures, as well as rainfall patters, can affect that growth. We also know that excessive rainfall, for example, can lead to increased nutrient runoff, which then is feeding the problem in another way.

Mr. {Tonko.} Yeah. Mr. Donahue, were you looking at that, that--

Mr. {Donahue.} No.

Mr. {Tonko.} Okay. All right. With that, I yield back.

Mr. {Shimkus.} Gentleman yields back his time, and the Chair now recognizes the gentleman from Ohio, Mr. Latta, for 5 minutes.

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Mr. {Latta.} Well, thanks again, Mr. Chairman, and thanks again for having our hearing, and thanks to our panel for being with us today. Really appreciate your time and expertise in this matter. And if I could--Director Butler, if I could ask you some questions right off the bat?

It was mentioned a little bit earlier that there are several types of cyanotoxins of concerns just besides the microcystins. Do you believe it would be helpful if the U.S. EPA had a comprehensive list of cyanotoxins determined to be harmful to human health in drinking water?

Mr. {Butler.} Mr. Chairman, Representative Latta, yes, we do. We know that that would take a long term commitment from U.S. EPA, and take an extensive period of time to do that, particularly if they were to develop regulatory levels about the harmful impacts for that. We are encouraged by the acceleration to provide states with some additional information and health advisory in 2015.

We think that will add to the body of research that is out there, although we think that we need to continue to accelerate, keep our foot on the gas, so to speak, about not only moving through 2018 with--moving with a regulatory

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level, not only for those that U.S. EPA had identified, but also do not forget about the other cyanobacteria and harmful algal derivatives that are out there that also need attention.

Mr. {Latta.} And also, you know, all the conversations we had during that first week of August, you know, when Toledo was having its crisis out there, in all that was going on, I know that--you mentioned what the state has done, especially on funding from the U.S.--or from the Ohio EPA. Because of the cost--because there was a significant amount of dollars here, when we are talking about the different types of testing that are going to be going--that could be done--and if you could just maybe go into all of it? Because I know that we are talking about, you know, the Elisa Method, and the LC-MS/MS test method that is being--that is more robust and efficient than the others, and being able to find different variants.

But if you could just kind of go into that, because I found it pretty interesting, one, about the--number one, the cost, two, about getting the equipment, and three, about finding the personnel, being able to just run that equipment.

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And then, again, I think, you know, in the north end of Ohio we have about 140 plus systems out there that are utilizing surface water, and what that would entail for all of those communities. I know that is a long question.

Mr. {Butler.} Mr. Chairman, Representative Latta, we have--exactly right. We have made a million dollars, as I mentioned in my testimony, available to--I think we have 125 systems that are surface water systems in the State of Ohio, many of those which take water directly from Lake Erie. We came to that relative number of a million dollars because we wanted to offer this Elisa screening technology to all of them. That cost of doing that is about $10,000, so a relatively modest amount of money.

What you get from that, in my layman's terms, is you get a piece of technology that is a broad spectrum identifier, if you have microcystin in your water. It is not a piece of technology that helps speciate out which protective variant or congeners you have, or what kind of cyanobacteria you have got. It is--if it is in there, it will tell you it is there, but it won't tell you which one it is, and it won't tell you whether it is one of those that may be harmful, or which ones

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it may not be.

So we think it is a great screening tool, and we think that a tiered approach would be most effective. If we are going to move into a more detailed system, and you talked about the LC-MS/MS technology, Dr. Grevatt could tell you what all of that acronym means, but, in my view, what it will do is--it is a much more refined testing methodology that gets down and helps you identify what variant of cyanobacteria do you have, and whether or not it may be one that is harmful. That is also helpful. If you could use that as a--the Elisa Method to determine whether you have something to be concerned with, then you could rely on the LC-MS/MS technology to then figure out exactly what variant you have go hand in hand. The issue we have with the LC-MS/MS is--or the HPLC, which is another, is cost.

Rather than $10,000 for a piece of equipment of Elisa that a community--small community could run, do some--and learn how to--and learn that very quickly, the cost to us in the State of Ohio would be around $400,000 for one piece of equipment. On top of that, you have the development of the method, which could take many months, 8 to 12 months to find

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the method. And then, for us, it is a cost concern about just finding somebody that is capable of running it. It is a very specialized piece of equipment. Having somebody with the right degree and credential to be able to keep them on staff and pay them, frankly, a state salary is very difficult. So while we like that technology, we also don't want to suggest that that be the only potential technology we use.

Mr. {Latta.} If I could just follow up just briefly? With that, how many communities could utilize one piece of equipment?

Mr. {Butler.} Mr. Chairman, Representative Latta, that is a good question. We have talked internally, and with U.S. EPA, about whether the State of Ohio or communities could group together. I think they could all--and we are seeing that happen now, frankly. Some communities do not want to take the grant monies from Ohio EPA, even for the $10,000 for the Elisa technology, because they are very close to another small neighborhood that is, or has the technology. They are partnering together, sharing services, which we very much applaud in the state. Sharing those services, banding

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together, and doing the testing.

So it is conceivable, and we would encourage it, that there would be a way for many communities to band together and use an HPLC methodology. We could also help them, through our testing capabilities with the State of Ohio. I know U.S. EPA has this, as well as many universities too, so there are multiple options, so not every community would need to invest that time and money.

Mr. {Latta.} Thank you. Mr. Chairman, I appreciate your indulgence in time, and I yield back.

Mr. {Shimkus.} Gentleman's time has expired. Chair now recognize the gentleman from Mississippi, Mr. Harper, who will be the vice-chair of this subcommittee in the next Congress. We want to congratulate him on that, and you are recognized for 5 minutes.

Mr. {Harper.} Thank you, Mr. Chair, and I want to thank the Chairman, and look forward to the next term, and I hope you will be pleased with that decision, so thank you. And glad to have the panelists here today, appreciate this. This is an important topic, important to many of us. And if I could start with Mr. Butler?

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And what is your expectation of how U.S. EPA should engage with the states before issuing its public health advisory?

Mr. {Butler.} Mr. Chairman, Representative Harper, that is a great question. What we have been encouraged by so far is the great working relationship we have got. We are very blessed to have the Office of Research and Development in Cincinnati. So them being able to help us in the Toledo situation was very helpful. In fact, we were flying samples down in the middle of the night, and their staff, you know, went to the airport to pick these samples up in the middle of the night, so it was just a great opportunity for us. We have been encouraged since then. We have got a great working relationship.

What our--and to answer your question directly, what we would prefer, and what we would like to see happen, is, as U.S. EPA--and we know they are on a very fast track to get this--us this health advisory information, but as they are going through this process to engage states that are interested, or that need to be engaged in the development of that, rather than at the end, after they develop that, hold a

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public hearing and public comment period. So I know it is a balance. We want to see this move along quickly and get the information, but we would prefer to be engaged up front, because we think we have information to offer.

Mr. {Harper.} And if I may ask, Mr. Butler, since the algal problem in Toledo, is the Ohio EPA on much better ground regarding testing protocols for microcystin?

Mr. {Butler.} Mr. Chairman, Representative, I think we are. You know, we have learned a lot after working with Toledo. We also have worked with all of our other surface water systems, not only in terms of offering technology and treatment, but we have developed, and have redefined, and continue to redefine on a consensus basis, with all of our surface water systems, statement of operations on how we-- everybody consistently manages tests for cyanobacteria.

Mr. {Harper.} You know, I am very pleased with your earlier comments on the coordination between the Ohio EPA and U.S. EPA of what you went through, and the--

Mr. {Butler.} Um-hum.

Mr. {Harper.} --that coordination that took place. But if we were looking overall, what improvements to government

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coordination between the states and Federal Government would recommend would need to occur, and why?

Mr. {Butler.} Very specifically, and I will just reiterate a comment I had before, as we focus more attention, and U.S. EPA is starting to aggressively develop not only health assessments, but further on, with potential regulatory limits in safe drinking water, through the contaminant rule, I think that coordinating more up front versus more reactive is something we would encourage, and think it ultimately leads us to a better product. I think we get there quicker, and I think U.S. EPA would concur with that. So it is not a fault, but I just think a process that would allow that would be much more beneficial.

Mr. {Harper.} And, Mr. Donahue, if you can just kind of educate me a little bit, and those that are tuning in, give us--discuss effective ways to treat drinking water for the cyanotoxins.

Mr. {Donahue.} Thank you, Congressman. Yes, typically, you know, conventional coagulation and sedimentation can take care of this. There are a number of other treatment technologies that are able to remove cyanotoxins from the

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water. Pre-treatment oxidation, and even microfiltration with membrane treatment are all options for treating drinking water.

Mr. {Harper.} Okay. Some of our testimony today talks about predicting cyanobacteria blooms through National Oceanic and Atmospheric Administration modeling. Can you please speak to the challenges of relying on this too much?

Mr. {Donahue.} I really don't have the answer for that question right now, but we would be happy to provide that.

Mr. {Harper.} Anybody else on the panel want to take a shot at that? Okay.

Mr. {Butler.} Well, Representative, what we are encouraged by is NOAA continues to refine their modeling, and being able to provide more and more specialized assessments in the western basin, we also are working with our aviation centers in Ohio in how we can coordinate with NOAA, and even NASA, on being able to provide more detailed information about looking at the western basin almost in real time, in a very specific location. The caution would be not to rely on that completely, because you may not always find that those are--those--if we have a harmful algal bloom, that those are

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visible from the surface, or from a multi-spectrum scanner.

So the need to do consistent sampling, and we do that in the near shore environment around the western basin, Ohio EPA and others do sampling to give us a predictor of when those harmful algal blooms may be in place.

Mr. {Harper.} Thank you, Mr. Chairman, and I yield back.

Mr. {Shimkus.} Gentleman yields back his time. Chair now recognize the gentleman from West Virginia, Mr. McKinley, for 5 minutes.

Mr. {McKinley.} Yeah, thank you, Mr. Chairman. At the conclusion of Grevatt's comment, and I think the Chairman mentioned it, and then I think, Mr. Donahue, you mention it as well, and that is the State Revolving Fund, I want to get back to that in a minute, but I thought I heard you say in your testimony that there were some 4,500 water treatment facilities in the State of Ohio. Is that accurate?

Mr. {Donahue.} That is correct, sir.

Mr. {McKinley.} And so we are now--and I don't know how many of that would be across the country. Yeah, if there are 4,500 in the State of Ohio, I don't know, how many water

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treatment facilities would we have across the country? Thousands?

Mr. {Shimkus.} You may want to direct that to Mr. Donahue, David.

Mr. {McKinley.} Yeah.

Mr. {Donahue.} Drinking water treatment facilities, there are in the neighborhood of 50 to 55,000 treatment--

Mr. {McKinley.} Okay.

Mr. {Donahue.} --facilities--

Mr. {McKinley.} So--but not all of them are going to be surface water--

Mr. {Donahue.} No.

Mr. {McKinley.} --so--but I think we are primarily focused--where--back in the State Revolving Fund, we have had people come before us in this panel, and other committees, where they have talked about--the State Revolving Fund doesn't have an adequate amount of money to meet all of their challenges that they have. And perhaps this is--this situation--I am not denying it is happening. I think we have to deal with that, and it is just going to exacerbate the problem all the more if there is not sufficient money with

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the SRF. Would you agree with that?

Mr. {Donahue.} Absolutely. There is significant competition for SRF funding right now. AWWA has produced a report that has identified more than a trillion dollars' worth of infrastructure requirements for the country in the next 20 years, and that alone can tax the SRF program. And this would only serve to make that matter worse.

Mr. {McKinley.} Well, that--thank you, because I am concerned, as I mentioned in my earlier remarks at the last panel, where those small communities, 4,500--how they are going to come up with the money, and there has to be a grant to be able to help them out to do this. And if the SRF doesn't have sufficient funds, it just exacerbates this problem all the more.

So, having said all that, I am curious, and probably should have asked Grevatt when he was here, why would the EPA reduce funding for the SRF? This--the president just came out with his budget, reduces the State Revolving Fund by nearly 40 percent. And when we asked them that question, why did they reduce it, knowing so many people in these small communities need the money, why would they do that? And his-

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-and her answer was, we have changed our priorities. Our priorities are not State--providing money for communities for water systems, but rather for climate change initiatives, pamphlets, literature, and education processes around the country, and perhaps around the world.

How would you--in terms of priorities, okay, would it be better to be able to provide money for the--these communities that need water, clean water? Because we have all talked about how desperately we need it. Or is it more important that we have clean--climate change initiatives?

Mr. {Donahue.} Certainly, Congressman. Maintaining the SRF program, and even increasing it, is something that the American Water Works Association fully supports. Many of our small, medium, and large communities rely quite heavily on the revolving loan funds to support capital projects within their community.

Mr. {McKinley.} So you would have a problem with transferring $581 million out of the State Revolving Fund?

Mr. {Donahue.} I am not sure I am the best person on this panel to answer that question, and Dr. Grevatt is still here, but I would say yes.

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Mr. {McKinley.} Thank you. I yield back the balance of my time.

Mr. {Shimkus.} Gentleman yields back his time. Looking to the minority side, Mr. Barrow, would--Mr. Barrow waives. Chair recognizes the gentleman from Ohio, Mr. Johnson, for 5 minutes.

Mr. {Johnson.} Thank you, Mr. Chairman, and thank you to the panel members for joining us today. Mr. Butler, it is good to see some home folks here today from Ohio.

Mr. {Butler.} Yes, sir.

Mr. {Johnson.} Good to have you.

Mr. {Butler.} Thank you.

Mr. {Johnson.} Mr. Butler, does Ohio EPA support the U.S. EPA issuing a non-contaminating monitoring rule for microcystins?

Mr. {Butler.} Mr. Chairman, Representative Johnson, yes, we do?

Mr. {Johnson.} You do?

Mr. {Butler.} Yeah.

Mr. {Johnson.} Okay. How is Ohio dealing with nutrient contribution to source water from non-agricultural

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contributors?

Mr. {Butler.} Mr. Chairman, Representative, that is a good question. As I mentioned in my testimony, some of the immediate after action items that we did was--we were able to secure some money from U.S. EPA. You have often heard, in our state, people talking about how Grand Lake St. Mary's was called a watershed in distress, and there has been a call for calling the western basin of Lake Erie a watershed in distress. While we think this is important, and that is a designation that we see as useful in a grand lake, it is not something that we agree with for the western basin, and the reason is it is only focused on agricultural sources. There are many contributing sources in the western basin that are non-agricultural.

We have used the money that was provided by U.S. EPA by the GLRI to go down into the very small sub-watershed levels, use the information we have through our monitoring and sampling that worked throughout the state, and in the western basin, to determine if it is an agricultural contribution that is most predominant, if it is point source, or other non-point source, or even--in many parts of our state we have

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failing not--failing on-lot septic sewage systems. It is generally a combination of all those. No watershed is the same. So we have been able to use that money to target and develop--I call it a prescription for each one of these very small sub-watersheds. That is much more productive, than--it is just a broad brushed approach.

Certainly agriculture recognizes that they have a contribution, and they are--they have, and we agree, that they have stepped up to help us here. But there are other sources that we are also working on. We have introduced two pieces of--we have--we are going through our end of the year legislative session. In House Bill 490 we have recently added two components. One is adding monitoring, a requirement that all of our wastewater treatment plants would include monitoring for phosphorous, so we can determine if they are contributing, and then manage that. And the second is we introduced part--a bill that would disallow, unless under certain conditions, the open lake disposal of dredge material on Lake Erie, which is also thought to be a contributor for harmful algal blooms.

We have also--on the agriculture side, we have worked a

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lot through Senate Bill 150 that was implemented, on training all the farmers to make sure that they are certified on application of manure. And we have also done cover crop work. We have done soil testing. And so we have got a comprehensive program across the board.

Mr. {Johnson.} Okay. Well, thank you. I understand that some groups in Ohio have a citizen sampling program for dealing with microcystin. Are the groups operating in Toledo working with Ohio EPA?

Mr. {Butler.} I have heard that the groups exist. It is not to my knowledge they have worked with us.

Mr. {Johnson.} Okay. Does Ohio EPA have a citizen sampling program?

Mr. {Butler.} We have a program called Credible Data, so whether it is Ohio EPA--we have got a lot of scientists that are out in the field collecting water quality data. We will accept, under certain conditions, if they, you know, if citizens or other organizations collect samples, we can accept those, as long as they follow the proper chains of custody, and that the samples are accurate samples. We have not only guidance in Ohio, but law in Ohio that directs how

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we do that, and we are willing to train people to do that.

Mr. {Johnson.} Okay. Well, you mentioned chain of custody. How important is chain of custody, and using approved methods when sampling is occurring?

Mr. {Butler.} It is crucial. Assigned--we base all of our decisions based on science, and the legality of those results. So having a complete chain of custody from the time the sample is taken, knowing how those samples were taken, what parameters they are taken, make sure they are taken under the right methods, they are preserved correctly, that those samples then are handled correctly for certain periods of time. Some call for icing of those samples, some don't. So this--the whole chain of custody, and how those samples are managed to get them to our laboratory, to get them through our testing methodology, is critical. And if it is not done the right way, it calls into question the result.

Mr. {Johnson.} Okay. Well, thank you very much. Mr. Chairman, I yield back.

Mr. {Shimkus.} Gentleman yields back his time. I would be remiss if I didn't also mention the USDA Rural Development ability to access water assistance for small rural Americans.

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It has been very, very helpful, and I can't say enough about it. Based upon the agreement between the majority and minority committee staff, I would like to request unanimous consent that the letters from the following organizations, as well as their attachments, be inserted into the hearing record. The Association of State Water Drinking Administrators, the Internal Bottled Water Association, the Fertilizer Institute, the American Municipal Water Association. Without objection, so ordered.

I would also like to request unanimous consent that members have 5 legislative days to submit statements for the record. And, with that, I want to thank you for coming. I think it was very helpful and educational. I look forward to working with you, and the hearing is adjourned.

[Whereupon, at 11:41 a.m., the Subcommittee was adjourned.]