TESTIMONY OF
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BEFORE THE
HOUSE COMMITTEE ON ENERGY AND COMMERCE
SUBCOMMITTEE ON ENERGY AND ENVIRONMENT

November 19, 2014

Good morning, Chairman Shimkus, Ranking Member Tonko, and members of the Subcommittee. I am Peter Grevatt, Director of the U.S. Environmental Protection Agency's Office of Ground Water and Drinking Water. Thank you for the opportunity to testify today on the EPA's activities to address cyanobacterial harmful algal blooms (CyanoHABs) and their impact on drinking water supplies.

Incident at Toledo's Collins Park Water Treatment Plant

On Friday August 1, 2014, officials at Toledo's Collins Park Water Treatment Plant notified the Ohio Environmental Protection Agency (Ohio EPA) and U.S. EPA of an elevated sample reading for the algal toxins Microcystins. On the morning of August 2, Toledo Mayor Collins issued a "do not drink or boil" advisory, as recommended by Ohio EPA, to the nearly 500,000 customers served by the water system, leading to the declaration of a state of emergency by Ohio Governor Kasich and mobilization of the Ohio National Guard to provide emergency drinking water supplies to the impacted residents. The presence of the toxin was related to a cyanobacterial harmful algal bloom (CyanoHAB) near Toledo's drinking water intake on Lake Erie.

In an effort to verify the results, the public water system requested independent laboratory analysis by the neighboring Oregon Water Treatment System, Ohio EPA, U.S. EPA, and Lake Superior State University. The U.S. EPA performed sample analyses throughout the course of the weekend to confirm the concentrations of algal toxins and to help identify the optimal approach for controlling the toxins at the treatment plant and in the distribution system. Subsequent adjustments at the treatment plant led to reductions in the concentrations of algal toxins in the distribution system, and Mayor Collins lifted the "do not drink or boil water" advisory and returned services to its customers on Monday, August 4.

Causes of CyanoHABs

Cyanobacteria are photosynthetic bacteria that share some properties with algae and are found naturally in surface waters of lakes and ponds. When conditions are favorable, cyanobacteria can rapidly multiply in surface water and cause harmful blooms. Favorable conditions that enhance bloom formation and persistence include light intensity and duration, nutrient availability (such as nitrogen and phosphorus), water temperature, pH, water flow, and water column stability. Some species of cyanobacteria produce toxic compounds, known as cyanotoxins.

Based on the surveys that have been carried out to date in U.S. waters, the most commonly identified cyanotoxins are Microcystins, Cylindrospermopsins, Anatoxins and Saxitoxins. The specific means by which these factors promote the growth of cyanobacteria are not well understood. Point sources (which may include discharges from sewage treatment plants and concentrated animal feeding operations) and non-point sources (which may include diffuse

runoff from urban stormwater, roads and agricultural fields), can contribute the excess nitrogen and phosphorus that can promote the growth of CyanoHABs.

Health Effects of CyanoHABs

The presence of high levels of cyanotoxins in recreational waters and drinking water may cause a wide range of adverse health effects in humans including fever, headaches, muscle and joint pain, blisters, stomach cramps, diarrhea, vomiting, mouth ulcers, and allergic reactions. There have also been many documented reports of dog, bird, and livestock deaths throughout the world as the result of consumption of surface water with cyanobacterial blooms. While the precise levels of risk associated with low levels of cyanotoxins in drinking water is uncertain, the serious health effects reported following exposure of humans and pets to cyanotoxins suggest that this is an important issue to address in the nation's drinking water supplies.

Authorities Under the Safe Drinking Water Act

Currently there are no U.S. federal regulations concerning the management of harmful algal blooms in drinking water under the Safe Drinking Water Act (SDWA). The EPA has been working on finalizing health advisories for two cyanotoxins commonly associated with CyanoHABs, Microcystins and Cylindrospermopsin; available data on Anatoxin-a is not robust enough to develop a health advisory at this time. These non-regulatory health advisories will establish concentrations of drinking water contaminants below which adverse health effects are not anticipated to occur. In addition, the EPA has been actively collaborating with our stakeholders for several years by conducting studies to identify and evaluate causes, detection, treatment, and health and ecological effects in the U.S. The EPA is also collaborating with states

and Canada to establish harmonized policies for cyanotoxins at the federal, state and cross-border levels.

The Contaminant Candidate List (CCL) and the Unregulated Contaminant Monitoring Rule (UCMR) are two tools that SDWA establishes for identifying contaminants that may be subject to regulation in the nation's drinking water supplies. My office has listed cyanobacteria and cyanotoxins on the three drinking water CCLs that the EPA has published and is considering including Microcystins and other cyanotoxins in the fourth round of UCMR.

The CCL is a list of unregulated contaminants that are known or expected to occur in public water systems in the U.S. that occur at a frequency and at levels of public health concern and where there is a meaningful opportunity for health risk reduction. The EPA uses this list of unregulated contaminants to prioritize research and data collection efforts to help us determine whether we should regulate a specific contaminant. Based on toxicological, epidemiology, and occurrence studies, my office has focused on three of the more than 80 variants of cyanotoxins, recommending Microcystins, Anatoxin–a and Cylindrospermopsin for further steps to consider for regulation under SDWA.

The EPA uses the UCMR 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 toxins has prevented the EPA from including cyanobacterial toxins in the current and previous rounds of UCMR. The agency is currently working on the development of improved analytical methods for cyanotoxins to support a nationwide monitoring

effort for Microcystins, Anatoxin-a, and Cylindrospermopsin through the UCMR. These analytical methods will allow more specific measurement of cyanotoxins at lower concentrations and with greater accuracy and precision. Upon successful validation, the EPA expects to publish these methods in calendar year 2015, in time to consider including several cyanotoxins in the fourth UCMR.

Monitoring for the fourth round of UCMR will begin 2018. However, given the urgency for responding to the ongoing challenges related to CyanoHABs, the EPA is identifying additional strategies for gathering robust data on the regional and national occurrence of CyanoHABs, such as collaborating with states and other federal agencies, including the U.S. Geological Survey and the National Oceanic and Atmospheric Administration. The 2014 reauthorization of the Harmful Algal Bloom and Hypoxia Research and Control Act (P.L. 113-124) authorizes the EPA, working with an interagency task force led by NOAA, to administer the freshwater HAB program.

The EPA expects to finalize the health advisories for two cyanotoxins commonly associated with CyanoHABs in 2015. Health advisories are not federally enforceable standards, but are intended to provide states, municipalities, and other local officials with technical guidance for protecting public health or for the development of their own guidance. The EPA is currently conducting an independent external peer review of the draft health advisory for Microcystins and Cylindrospermopsin to ensure that it reflects the best available science to develop levels for these cyanotoxins below which adverse health effects are not anticipated to occur.

The EPA is also working to develop national recommended ambient water quality criteria pursuant to the Clean Water Act for the protection of human health for Microcystins, Anatoxin-a, and Cylindrospermopsin. These recommended criteria will identify levels of cyanotoxins at which adverse health effects are not anticipated to occur from drinking water or eating contaminated fish and shellfish. These levels can be used by states and tribes as they develop their water quality standards.

The EPA's website currently provides information for state and water sector professionals on the recommended treatment practices that water systems can utilize to reduce the levels of cyanotoxins in drinking water. This information will also be incorporated into the health advisory, to enable water systems and state officials to determine when steps should be taken to address elevated levels of cyanotoxins in drinking water supplies and to provide them with recommendations on effective strategies to do so.

In the aftermath of the Toledo incident, the EPA engaged with states and water sector professionals to provide information on human health effects, analytical screening tools, and the effectiveness of various treatment processes to remove or inactivate the three most important cyanotoxins that have been found broadly in drinking water sources in many parts of the U.S.: Microcystins, Anatoxin-a, and Cylindrospermopsin. In September, the EPA published guidance to provide recommended procedures for preservation, handling, and transportation of monitoring samples to ensure that challenges that were encountered during the Toledo incident are not repeated elsewhere.

Preventing HABs – Source Water Protection and Drinking Water Infrastructure

This year's incident in Toledo resulted from high levels of algal toxins in western Lake Erie and difficulties in removing those contaminants at the treatment plant. Strong source water protection programs and continued investments in the nation's drinking water infrastructure will be necessary to eliminate these sorts of events in the future.

Preventative measures are the preferred approach to managing the occurrence of cyanobacterial blooms. The most effective preventative measures are those that seek to control the anthropogenic influences that promote blooms such as the leaching and runoff of excess nutrients. Effective management practices for nutrients, specifically nitrogen and phosphorus, can reduce loadings from both point and nonpoint sources, including water treatment discharges, and runoff from urban, suburban and rural areas. These steps will be particularly important as communities face challenges with increasingly intense precipitation events that may promote the growth and persistence of HABs in the nation's source waters.

Since the Great Lakes Restoration Initiative was established in 2010, the EPA has made it a priority to fund nutrient runoff reduction in partnership with its fellow federal departments, including USDA and DOI, investing tens of millions of dollars in watersheds such as the Maumee River, Lower Fox River and Saginaw River. More recently, in response to the Toledo event, the EPA redirected $12 million in Great Lakes Restoration Initiative funding to federal and state agencies to target HABs in western Lake Erie. This funding will be used to expand monitoring and forecasting to help drinking water treatment plant operators and beach managers minimize impacts, increase incentives for farmers in western Lake Erie watersheds to reduce runoff, and improve measurements of nutrient loads in Lake Erie tributaries.

Controlling and managing cyanobacteria in surface water, and treating cyanotoxins in drinking water, is critical to protect human health. Drinking water treatment processes have been shown to be effective in removing cyanotoxins. However, these treatment techniques can generate a considerable expense for local communities which are already facing extensive infrastructure needs to meet the demand of their customers. Ensuring adequate investment in our nation's water infrastructure is necessary to ensure that drinking water treatment plants are able to effectively treat emerging contaminants and prevent events such as the one in Toledo.

An important component of preventing or minimizing cyanotoxin impacts is through early warning of CyanoHAB events. During the bloom season, NOAA monitors and predicts CyanoHABs in Lake Erie, providing weekly forecasts to water managers. This early warning allows water managers to take actions when CyanoHAB events threaten their system's source water.

Conclusion

As this summer's Toledo incident highlights, CyanoHABs have become an increasing problem that can affect communities all across the country. Toledo and the surrounding communities on western Lake Erie remain vulnerable to emergency shutdowns from CyanoHABs, and coordinated federal, state and local actions must continue to protect the nation's drinking water supplies. The EPA is taking aggressive action to develop and publish health advisories, water quality criteria, and analytical methods while providing ongoing technical assistance to states and communities. The EPA will continue to engage with utilities, and local, state, and federal

government partners, to reduce utilities' vulnerability to such incidents through preventive and preparedness measures.

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