The Committee on Energy and Commerce

Memorandum

November 17, 2014

To: Members, Subcommittee on Environment and the Economy

From: Majority Committee Staff

Re: Hearing on Cyanotoxins in Drinking Water

On Wednesday, November 19, 2014, at 10:15 a.m. in 2322 Rayburn House Office Building, the Subcommittee on Environment and the Economy will hold a hearing entitled "Cyanotoxins in Drinking Water:"

I. Witnesses

Panel I

- Dr. Peter Grevatt, Director, Office of Ground Water and Drinking Water, U.S. Environmental Protection Agency;

Panel II

- The Honorable Craig W. Butler, Director, Ohio Environmental Protection Agency; and,

- Mr. John Donahue, General Manager, North Park (IL) Public Water District, *on behalf of the American Water Works Association.*

Additional witnesses may be announced later.

II. Background Summary

Drinking water contamination by algal blooms in the source water of public water systems gained national attention this summer when blue-green algae (cyanobacteria) laced with a toxin called microcystin (a cyanotoxin) were found in Lake Erie and Toledo's Collins Water Treatment Plant. On August 2, 2014, based upon two sample readings for microcystin that were above Ohio's one (1) microgram per liter standard, the City of Toledo, Ohio urged all Toledo water customers to neither drink nor boil its treated tap water until an "all clear" was issued. Residents were later advised against using the water to brush their teeth, bathe their children, or give to their pets.[12] Two days later, the Mayor of Toledo lifted the advisory.[3] However, after the

[1] http://www.who.int/water_sanitation_health/dwq/chemicals/microcystinsum.pdf?ua=1
[2] http://toledo.oh.gov/news/2014/08/urgent-water-notice/

ban was lifted the city banned swimming and other recreational activities in one of the drinking water reservoirs.[4]

Cyanobacteria and cyanotoxins

Cyanobacteria are often found in lakes and other surface water. Common triggers for the growth of cyanobacteria include warm water temperatures and high levels of light and nutrients (primarily phosphorus and nitrogen). Nutrients include agricultural runoff (fertilizers and manure); discharges from sewage treatment plants; and storm-water runoff from lawns, streets, and elsewhere.

Some cyanobacteria contain or create various cyanotoxic strains, which can contaminate surface waters and drinking water supplies. These toxins can affect the liver, skin, or nervous system. Exposure to cyanotoxins can cause a range of health effects, from mild rashes to severe illness. In addition, deaths of exposed wildlife, livestock, birds, and pets have been documented worldwide.[5]

Most human exposures are thought to occur during recreational activities such as swimming and boating through accidental ingestion or inhalation of water, or when skin comes into contact with toxins. Exposures also can result from using contaminated water for drinking or showering.[6]

Drinking Water Standards for Cyanotoxins

No enforceable Federal standards or guidelines have been established for cyanotoxins in drinking water. The World Health Organization (WHO) has issued a provisional drinking water standard of 1 microgram per liter (µg/L, or parts per billion) for microcystin-LR, one of the most common and harmful cyanotoxins. Ohio and Oregon have adopted the WHO drinking water guidance levels, while Minnesota has established a more stringent level based on acute infant exposure.

On August 8, 2014, the Association of State Drinking Water Administrators (ASDWA) published the results of a survey of States on cyanobacteria and cyanotoxins in drinking water. The survey responses indicate that while nine States have created programs, developed health thresholds, or enacted policies and protocols for sampling and issuing public notices, all of the respondents would like to have more Federal leadership to help them address these issues. The respondents specifically noted in their comments that help is needed to:

- Provide Federal guidance values and analytical methods and risk communications strategies;

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[3] http://www.washingtonpost.com/news/post-nation/wp/2014/08/04/toledo-mayor-lifts-ban-declares-drinking-water-safe/

[4] http://www.toledoblade.com/local/2014/08/20/Toxin-from-algae-prompts-ban-on-swimming-at-Ohio-reservoir.html

[5] http://www.crs.gov/pages/Insights.aspx?PRODCODE=IN10131

[6] Ibid.

- Develop appropriate notification language to better inform the public when a cyanobacteria bloom is occurring, experiencing taste and odor complaints from customers, gastro-intestinal illnesses are being reported, and toxin concentrations exceed thresholds in drinking water supplies;
- Address issues when toxins concentrate in treatment facility sludge without any blooms in the water source; and,
- Consider the impacts to Ground Water Under the Direct Influence of Surface Waters that have toxic blooms. (public water supply wells may tap groundwater influenced by surface water).

Challenges to Governmental Involvement Concerning Cyanotoxins in Water Supplies

An Environmental Protection Agency (EPA) factsheet notes that conditions that cause cyanobacteria to produce cyanotoxins are not well understood. Further, biochemical and analytical complexities make it difficult to determine which toxins are present.[7] Not only does incorrect identification of a cyanotoxin by a water system complicate its ability to properly treat for it, but selection of the wrong treatment can cause some bacteria to release more toxins into the water.

EPA is working to issue a health advisory to help States and water providers address certain cyanotoxins. Authorized under section 1412(b) (1)(F) of the Safe Drinking Water Act (SDWA), health advisories generally include non-enforceable contaminant values based on non-cancer health effects, and technical guidance on health effects, test methods, and treatment technologies. In 2015, EPA plans to issue advisories for those cyanotoxins for which it has sufficient health effects data, microcystin-LR and cylindrospermopsin. Also in 2015, EPA plans to finalize analytical methods for microcystins-LR and the other targeted cyanotoxins. These methods will allow more specific measurement of the toxins at lower concentrations and with greater accuracy and precision.[8]

To pursue enforceable drinking water regulations under SDWA, EPA must engage in a multi-step process. First, EPA must regularly prepare contaminant candidate lists (CCLs), which identify and prioritize contaminants that may require regulation. In 1998, EPA listed cyanobacteria and their toxins as candidates for regulation. EPA's 2009 list CCL-3 included three cyanotoxins: microcystin-LR, anatoxin-a, and cylindrospermopsin.

Second, to satisfy SDWA criteria to begin drafting enforceable regulation of a contaminant, EPA must make a determination that the contaminant requires national regulation to provide a "meaningful opportunity for health risk reduction for persons served by public water systems," based on the contaminant's occurrence in public water systems and health risks.[9] To meet SDWA requirements for a regulatory determination, EPA needs additional health effects and occurrence data for each of the toxins. EPA is conducting health effects research and

[7] http://water.epa.gov/scitech/swguidance/standards/criteria/nutrients/upload/cyanobacteria_factsheet.pdf
[8] http://www.crs.gov/pages/Insights.aspx?PRODCODE=IN10131
[9] SDWA section 1412(b)(1)

developing analytical testing methods for the cyanotoxins. Additionally, EPA could employ section 1445 of SDWA to help the Agency better understand the occurrence of cyanotoxins in drinking water by establishing a rule targeted monitoring of unregulated contaminants.

Similarly, if EPA decided to regulate the toxins, more data are needed to proceed. Currently, the risk of exposure to low levels of cyanotoxins in drinking water is too uncertain to support setting a standard.

III. Staff Contact

Please contact Jerry Couri, David McCarthy, or Tina Richards with the Committee Staff at (202) 225-2927 with any questions.