

# US EPA Benthic HABs Discussion Group

[webpage](#)

**Time:** December 07, 2021, 8:30am – 10:00 am PST

## **Webinar registration:**

[https://zoom.us/webinar/register/WN\\_ZPS21a-aQa6XlrMI7W7oZQ](https://zoom.us/webinar/register/WN_ZPS21a-aQa6XlrMI7W7oZQ)



## **Agenda**

---

### **1) Introduction and announcements**

- Upcoming meetings, recent papers, other news, etc.

### **2) Margaret Smigo, Waterborne Hazards Program Coordinator, Virginia Department of Health** *2021 Cyanobacteria Bloom and Recreational Advisory for the North Fork Shenandoah River, Virginia, USA*

**Abstract:** In the summer of 2021, the Virginia Department of Health issued an 52-mile recreational advisory for a toxic benthic algal bloom on the North Fork of the Shenandoah River from Chapman Landing to Riverton in Shenandoah and Warren Counties. While water samples collected had little to no cyanobacteria or toxins, mat material contained a number of potentially toxic cyanobacteria, with *Microcoleus* being dominant. Laboratory assays also indicated the presence of cyanotoxins, particularly anatoxin-a within the mat material. The recreational advisories were first issued on 7/16, expanded on 8/11 and were lifted on 9/16. Besides recreational concerns for swimmers and waders, the river is also a source of drinking water for the Towns of Strasburg and Woodstock and the City of Winchester, all of which optimized treatment processes and conducted additional testing. Anatoxin-a was detected in both raw water and finished water at the Strasburg plant. There were two health complaints related to recreational exposure within the extent of the advisory and just outside of this advisory extent, in addition to three received by lab personnel handling and analyzing mat material from the bloom. Benthic cyanobacteria blooms have historically been uncommon in Virginia, with the majority of cyanobacteria advisories associated with planktonic blooms occurring in lakes since 2015. One other benthic mat forming bloom was noted in the summer prior, in Lake Gaston, with mat investigation and support for outreach developed for *Lyngbya/Microseira wollei* specifically, due to the widespread mat coverage observed in both the Virginia and North Carolina portions of the lake (with no health complaints reported to-date). Virginia's HAB Task Force began development of a benthic mat analytical method, as result of this bloom, which led to the group's ability to evaluate the NFSR bloom in 2021.

### **3) Jessica Trout-Haney, postdoctoral-researcher Dartmouth College** *Microcystins in benthic food webs of Greenlandic lakes and ponds*

**Abstract:** There is increasing concern worldwide regarding the social, economic, human and environmental health implications of cyanotoxins. While our understanding of cyanotoxins in freshwater ecosystems is derived largely from pelagic cyanobacteria in temperate or tropical regions, there is a growing body of literature demonstrating that benthic cyanobacteria produce cyanotoxins in diverse habitats worldwide. In Arctic lakes, benthic producers often comprise mats or colonies of cyanobacteria and while they are recognized for the important role they play in ecosystem productivity, the extent to which they contribute cyanotoxins remains poorly described. We have detected microcystins (MCs) in

# US EPA Benthic HABs Discussion Group

[webpage](#)

multiple food web components of Greenlandic lakes, including within the dominant benthic cyanobacteria (genus *Nostoc*) and in several benthic grazers and consumers. Through a series of field observation and experimental approaches, we have also found that *Nostoc* colonies contain MCs throughout multiple colony layers and that they are capable of contributing MCs into the surrounding water through colony damage from grazing or physical disturbance, and/or via leakage of MCs through undamaged colonies. Taken together, these findings highlight that MCs can be prevalent in multiple components of Arctic aquatic food webs and that both benthic and pelagic taxa may be important sources of MCs.

## Benthic HAB Workgroup Facilitators

See [webpage](#) for content and recordings of previous meetings. Contact us if you would like to be added to our list serve and receive communications.

Name	Affiliation	Contact Information
<a href="#">Margaret Spoo-Chupka</a>	Metropolitan Water District of Southern CA	Phone: 909-392-5127 Email: MSpoo-Chupka@mwdh2o.com
<a href="#">Keith Bouma-Gregson</a>	United States Geological Survey	Phone: 510-230-3691 Email: kbouma-gregson@usgs.gov
<a href="#">Dr. Lesley D'Anglada</a>	US EPA, Washington, DC	Phone: 202-566-1125 Email: Danglada.Lesley@epa.gov