Dealing with Cyanobacteria, Algal Toxins and Taste & Odor Compounds

Non-Credit Workshop
Offered with 13 Ohio EPA contact hours for PWS Operators

**Prerequisites:** None, however we recommend that you complete a phytoplankton ID class prior to attending this workshop.

**Description:** Lecture, laboratory, and field workshop to learn about cyanobacteria, their toxins, and the taste and odor compounds they produce; monitoring, collecting and processing methods; addressing algal toxins and taste and odor compounds in source water and water treatment plants; using remote sensing to track HABs; understanding recent initiatives at the state and national level dealing with algal toxins.

This non-credit workshop fee is **$352** that includes room and meals for one night and two days.

**Objectives:**

- Participants will learn basic limnology concepts that relate to harmful algal bloom (HAB) development and the problems that HABs cause
- Participants will learn which cyanobacteria are toxin and/or taste and odor producers
- Participants will learn about algal toxin characteristics and how they are removed at water treatment plants
- Participants will learn sampling and monitoring procedures for cyanobacteria and algal toxin detection
- Participants will learn reservoir and source water management strategies to deal with cyanobacteria
- Participants will learn about NOAA’s remote sensing program to track HABs.
- Participants will learn about recent national and state level HAB initiatives that include tracking HABs, and new guidance for PWS operators.

**Grading:** Satisfactory/Unsatisfactory

**Texts/ Materials:** Handouts will be prepared. No texts or materials are required. You may bring samples of your water for microscopic analysis.
Day One

8:00-9:00 AM Check-In
9:30-10:0 AM Orientation
10:00 AM – Noon
   Greetings/Introduction/Orientation
   What are Cyanobacteria-Basic Ecology
   Limnology Concepts

Noon-1:00 PM – Lunch
1:00 PM – 5:00 PM
   Cyanobacteria Toxins
   Historical Outbreaks, Recent Case Studies
   Cyanobacteria Relationship with Taste & Odor Compounds and Events

Break (15 minutes)
   Harmful Algal Bloom Identification
   Harmful Algal Bloom Tracking with Satellites

5:00-6:00 PM – Dinner
6:00 PM- Optional Tour of Bivalve Island
7:00 PM--Optional Cyanobacteria Lab ID Session

Day Two

7:00 AM – Breakfast
8:00 AM – Noon
   Introduction to ELISA and Rapid Assessments for Toxin Analysis
   Cyanobacterial Cell and Toxin Removal Options for Drinking Water Treatment Plants

Break (15 minutes)
   Reservoir and Source Water Management

Noon- 1:00 PM – Lunch
1:00 PM - 4:00 PM
   Sampling and Monitoring Demonstrations on Boat
   Update on State Level HAB Initiatives
   Open Discussion/ Cyanobacteria ID review

4:00 PM – Depart Stone Laboratory
Instructor:

Richard Lorenz
Water Utility Manager
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Additional Presenters:

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