
Cyanotoxin Workshop

Development of Permanent Rules

Webinar
August 23, 2018



PUBLIC HEALTH DIVISION

Drinking Water Services

Workshop Agenda

- Welcome and Introduction
- Analytical Methods – EPA and Ohio
- Considerations for Permanent Rules:
 - Susceptibility criteria
 - Regulated cyanotoxins
 - Analytical methods
 - Use of screening method
 - Sampling frequency and triggers
 - Other topics
- Next Steps



Overview

- In June, the OHA director asked DWS to adopt regulations to ensure public health protection for cyanotoxins.
- Emergency rules were adopted July 1, expiring at the end of 2018. Permanent rules must be adopted by January 1, 2019.
- DWS is seeking common understanding and stakeholder input as we develop permanent rules.

Guest speakers

Will Adams

Analytical Chemist, Standards & Risk Management Division
US Environmental Protection Agency

Heather Raymond

HAB Coordinator
State of Ohio EPA

Risk and susceptibility criteria

- 340 PWS treat or purchase surface water in OR
- 230 surface water treatment plants
- 100 of these sources met the susceptibility criteria established in emergency rules, requiring cyanotoxin monitoring:
 - HAB or toxin detected in past
 - Downstream of water body with HAB
 - Source does not meet DEQ water quality standards
 - Other, as determined by the Authority

Susceptibility criteria, cont'd

- DEQ ambient water quality standards affecting cyanotoxins:
 - algae and aquatic weeds
 - nitrates
 - chlorophyll-a
 - phosphorus
 - pH
 - dissolved oxygen (May through October listings for cool and cold water);
- Source characteristics:
 - slow moving or stagnant water, temperature, or available sources of nutrients

Susceptibility Criteria cont'd

Rationale:

- **DEQ ambient water quality standards**
- Parameters indicate eutrophic conditions and high nutrient loads that can contribute to algae growth
- Sediment and turbid water indicative of high phosphorus (a critical nutrient for algae growth).
- Ammonia can indicate eutrophic conditions.
- Clarified to exclude dissolved oxygen conditions that occur in the fall, winter, and early spring months when HABs usually do not occur.
- **Source Characteristics:**
- Temperature is added since warmer waterbodies can promote algae growth.

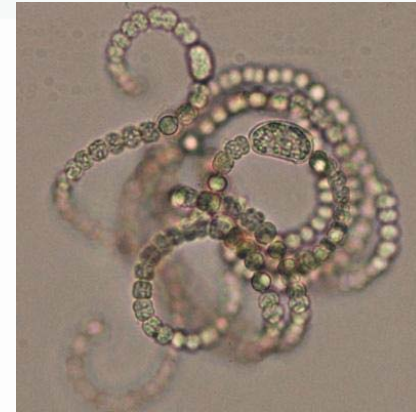
Susceptibility Criteria cont'd

Impacts of proposed changes:

- Sediment adds 5 new sources/systems
- Turbidity adds 2 sources
- Ammonia does not add any new systems
- Cold- or cool-water aquatic life criteria for Dissolved Oxygen was already used in the previous selection of susceptible systems, just clarifying wording.
- Discussion?



Regulated Cyanotoxins



- Temporary Rules:

| Cyanotoxin | For Vulnerable People (ppb) | For Age 6 and Above (ppb) |
|--------------------|-----------------------------|---------------------------|
| Total Microcystins | 0.3 | 1.6 |
| Cylindrospermopsin | 0.7 | 3 |

- Proposed Permanent Rules: No change

Regulated Cyanotoxins - Rationale

- EPA does not feel they have enough data in order to establish HALs for Anatoxin-a and Saxitoxin. Do we?
- Ohio, Rhode Island, and Oregon established state HALs, but the OH and RI levels for anatoxin-a are an order of magnitude greater than Oregon's levels, illustrating the need for a national standard.
- Microcystin and cylindrospermopsin are the most common cyanotoxins found in recreational waters in Oregon
- DWS may re-evaluate if EPA establishes additional

HALs

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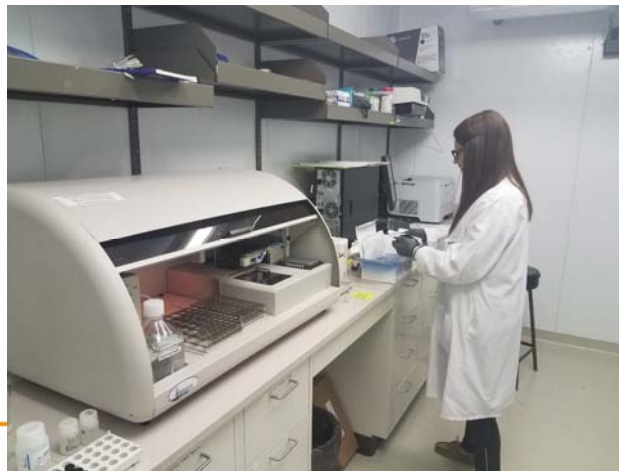
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Analytical Methods

- Temporary rules requires only ELISA methods, including EPA Method 546.
- Considerations for permanent rules:
 - EPA Method 546 for Microcystins
 - ELISA kit for Cylindrospermopsin; LC MS/MS (EPA Method 545) for confirmation sample in finished water

- Discussion?



Screening for Cyanotoxins

- Currently no screening, monitor cyanotoxins no less than every 2 weeks if susceptible
- Considerations for qPCR:
 - Early warning of cyanotoxins
 - 3 to 4 hours analysis time
 - Cost savings
 - Conservative: if no genes, no toxin
 - No lab capacity in Oregon currently
 - New use of PCR: some unknowns
 - Complexity to implement

Sampling Frequency & Triggers

- Temp rules, biweekly sampling of raw water, >0.3 ug/L triggers finished water sampling within 24 hrs
- Considerations / Options: Tiered monitoring schedule based on risk/susceptibility
 - High risk systems have past raw water detections >0.3 ug/L and sample weekly
 - Low risk systems only sample if toxin is found in source water >1 ug/L. If source water is unmonitored, sample biweekly.
 - Criteria for increased and reduced monitoring
 - Triggers for finished water monitoring

Other topics?

- Discussion



Next Steps

- Draft rules will be sent to DWAC and stakeholders September 7, comments due September 25
- Final proposed rules by October 22
- Public hearing November 27
- All comments due November 30
- Final rules December 14
- Effective date: January 1, 2019

Closing



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