# EPA's Activities on Harmful Algal Blooms and Preparing for Bloom Season
# Quarterly Call with State HABs Leads

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April 15, 2021

**Disclaimer: The views expressed here are those of the author and not necessarily those of EPA. Mention of products or services does not constitute an endorsement**

# EPA's Approach to Addressing HABs

Interdisciplinary Approach

- Ecologists
- Microbiologists
- Toxicologists
- Epidemiologists
- Chemists
- Hydrologists
- Biologists
- Oceanographers
- Modelers and Statisticians
- Engineers
- Taxonomists
- Public Health Specialists
- Economists
- Veterinarians

# Statutory Authority

- Harmful Algal Bloom and Hypoxia Research and Control Amendments Act (HABHRCA)
  - EPA for freshwater events of national significance and NOAA for marine
  - Stakeholder engagement and co-coordinate interagency research agenda.

# Additional Statutory Authority and Regulations: Drinking Water

Drinking Water Protection Act *(H.R. 212)* – August 2015

- Section 1459 was added to the SDWA and directs EPA to develop and submit a strategic plan for assessing and managing risks associated with algal toxins in drinking water provided by public water systems.
- Algal Toxin Risk Assessment and Management Strategic Plan for Drinking Water published in November 2015

Cyanobacteria and their toxins included in the Contaminant Candidate List (CCL) for Regulation Development Consideration

- CCL 1, 2, 3, and 4

Unregulated Contaminant Monitoring Rule (UCMR) 4

- Monitoring of certain cyanotoxins in drinking water public systems from 2018 to 2020.

# Guidelines

Drinking Water Health Advisories - June 2015

- Microcystins and Cylindrospermopsin
- HAs are non-regulatory guideline values set at levels anticipated to not create adverse health effects for specific exposure durations.
- Bottle-fed infants and pre-school children: MCs 0.3 µg/L and CYL 0.7 µg/L
- School-age children and adults: MCs 1.6 µg/L and CYL 3 µg/L

Recommended Human Health Recreational Ambient Water Quality Criteria/Swimming Advisories – May 2019

- Microcystins and Cylindrospermopsin
- MCs 8 µg/L and CYL 15 µg/L

# Technical Support Resources

- Analytical methods development (2015/2016)

Method numbers:

  - –544 (microcystins and nodularin-R)
  - –545 (anatoxin-a and cylindrospermopsin)
  - –546 (Adda ELISA Method for microcystins and nodularins).

- Recommendations for Public Water Systems to Manage Cyanotoxins in Drinking Water (2015)
- Cyanotoxin Management Plan Template and Example Plans (2016)
- Water Treatment Optimization for Cyanotoxins Document (2016)
- Drinking Water Cyanotoxin Risk Communication Toolbox (2016)
- EPA Cyanotoxins Drinking Water Webpage
- Recreational Water Communication Toolbox for Cyanobacterial Blooms (2017)
- Recommendations for Cyanobacteria and Cyanotoxin Monitoring in Recreational Waters (2019)
- EPA Cyanobacteria and Cyanotoxins in Recreational Waters Webpage

# Outreach and Tools


- EPA's Cyanobacteria HABs Webpage
- Freshwater HABs Newsletter and Outreach
- Fact Sheets
  - Cyanobacteria and Cyanotoxins: Information for Drinking Water Systems
  - Climate Change and Harmful Algal Blooms
- Videos on HABs
- EPA Scientist Nick Dugan on algal water treatment studies: https://www.youtube.com/watch?v=mnok5G0HBgM
  - Protect your pooch from HABs (2013)- https://www.youtube.com/watch?v=goPMNzDmJDg
  - EPA's Efforts to Safeguard Drinking Water from HABs and Science safeguards drinking water from HABs (2015)
- EPA's HABs Listserv: epacyanohabs@epa.gov

# Additional Statutory Authority and Regulations: Surface Waters

## Clean Water Act: Summary

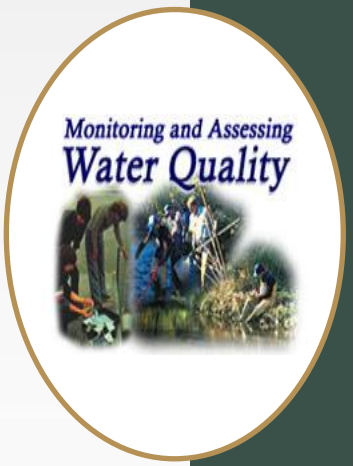
- The Clean Water Act (CWA) establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters.
- For cyanoHABs, control of pollutants, such as excess nitrogen and phosphorus, that can increase the production of toxins and overgrowth of cyanobacterial biomass is key.
- Water quality standards comprise an antidegradation policy, designated uses, and water quality criteria for protection of designated uses. EPA has published as guidance cyanotoxins criteria for states and authorized tribes to consider adopting to protect recreational uses:

Recommended Human Health Recreational Ambient Water Quality Criteria/Swimming Advisories – May 2019

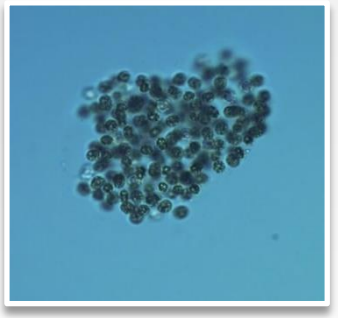
# Ambient Water Assessment

## National Aquatic Resource Surveys (NARS)

- The National Aquatic Resource Surveys (NARS) are collaborative programs between EPA, states, and tribes
- They are nationally-consistent studies of the nation's aquatic resources, designed to report on the condition of lakes, rivers/streams, coastal waters and wetlands.
- Survey parameters: Indicators associated with the presence of blooms and some cyanotoxins.



# Research



**EPA's Office of Research and Development**

- Safe and Sustainable Water Resources Strategic Research Action Plan
- Research Areas
  - Monitoring and Remote Sensing
  - Toxicology of Cyanobacteria
  - Ecology of Harmful Algal Blooms
  - Epidemiology and Health Effects of Cyanobacteria
  - Harmful Algal Blooms and Drinking Water Treatment

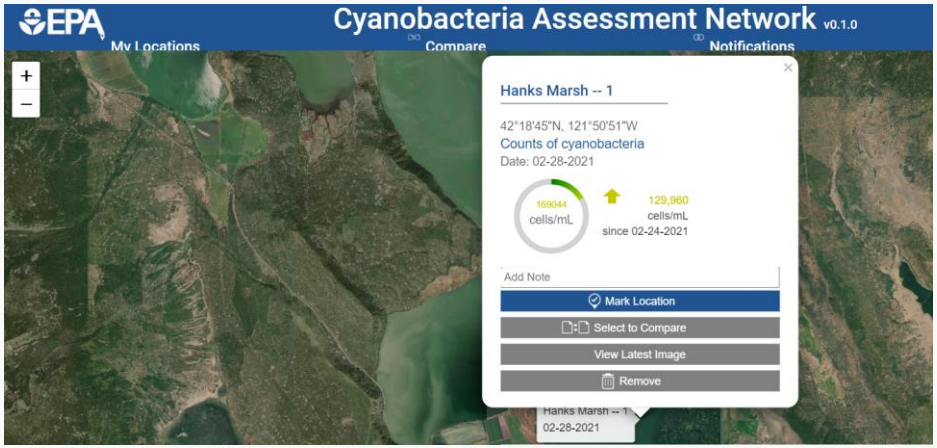
# Research in R10

**EPA's Office of Research and Development**

- Cyanobacteria Assessment Network (CyAN) Project – you can get the app at the google play store

  With many Pacific Northwest Tribal, State, and Local Partners!

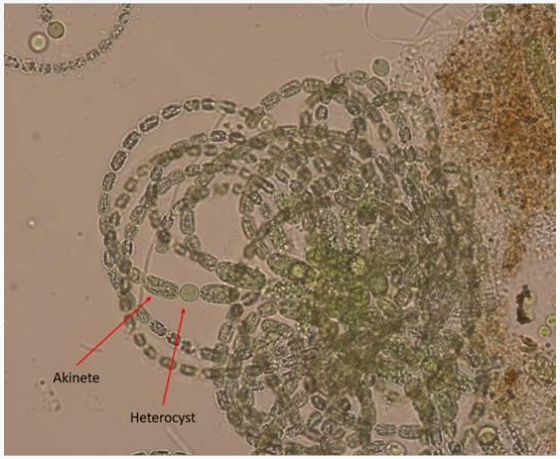
In development: desktop version



# Research in R10

## EPA's Office of Research and Development

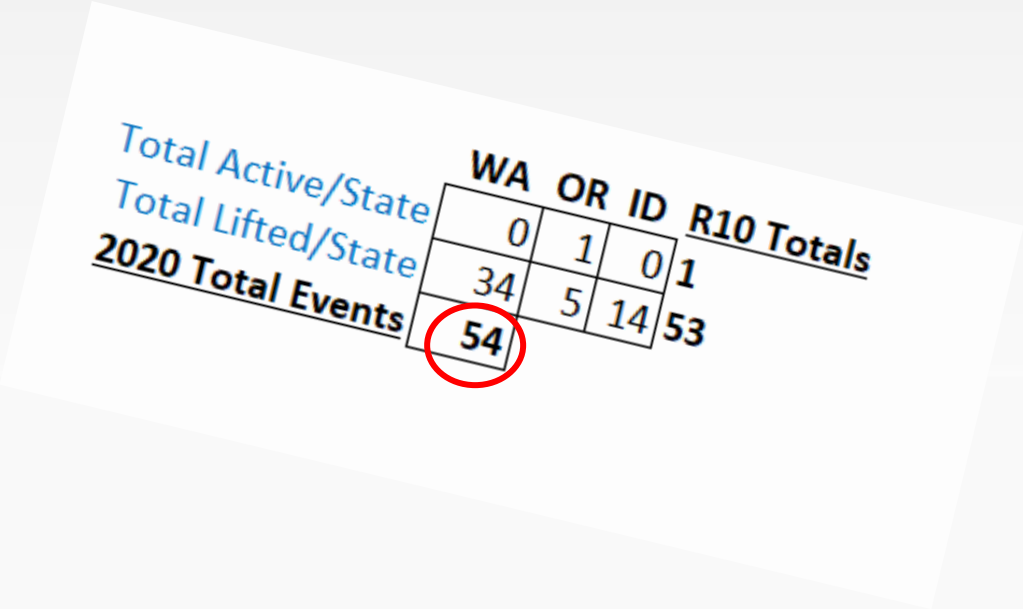
- J. Lu, PI – with Co-investigators at EPA R10, Oregon DEQ, City of Salem, Clackamas Water, USGS, WA Ecology and others
  - Molecular biology (qPCR-based tools) research to determine if toxin producing gene quantification, cyanobacterial metabolism and diversity can provide early warning of cyanotoxins prior to increasing above health advisory thresholds
  - Detroit Lake OR, Anderson Lake WA, Spanaway Lake WA
  - Testing analyses of water column, spatts, and core samples for DNA
  - Comparison to CyAN data in 2021-2022



Anderson Lake Dolichospermum spp.
Courtesy Jed Januch, EPA

# Recap of 2020 Season and Preparing for 2021

# 2020 Rec Advisories: ID, OR, WA



| | WA | OR | ID | R10 Totals |
|---|---|---|---|---|
| Total Active/State | 0 | 1 | 0 | 1 |
| Total Lifted/State | 34 | 5 | 14 | 53 |
| **2020 Total Events** | **54** | | | |

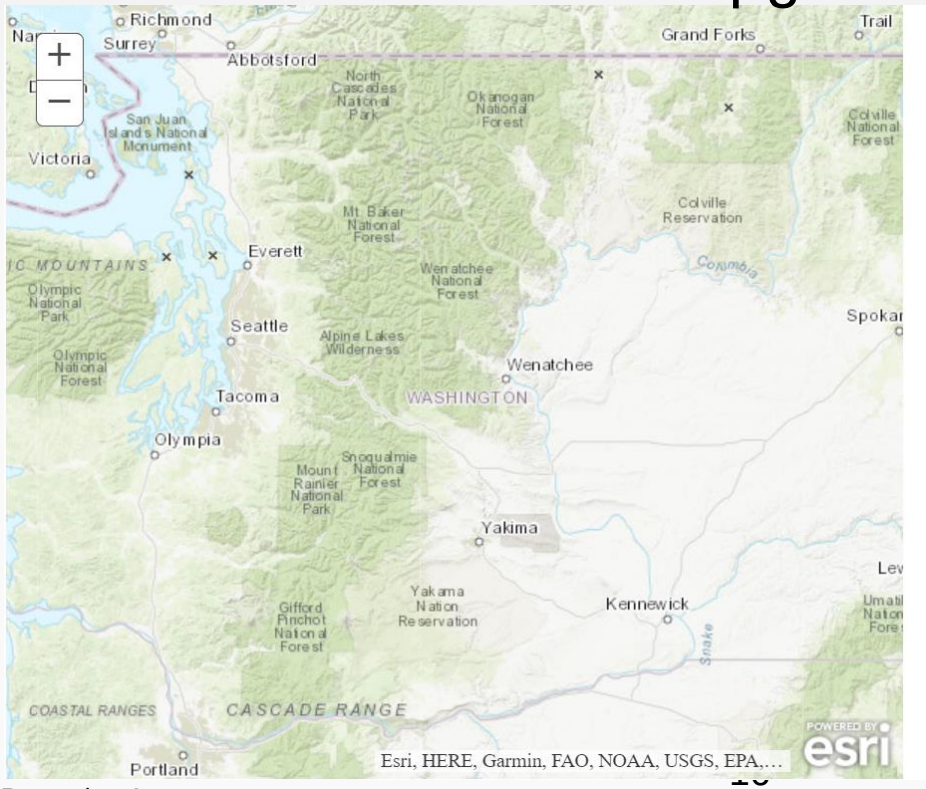
Compiled from state and local advisories compiled from online sources
Note Klamath Lake advisory counts as one advisory here but three on OHA website

# October-December Rec Advisories

some issued and many last through fall and winter

WA MCs>8.0 µg/L


WA Anatoxin a>1.0 µg/L




U.S. Environmental Protection Agency

Courtesy WA State Toxic Algae Program: https://www.nwtoxicalgae.org/

# Registration now open!

- April 28, 2021: *Protecting Drinking Water Sources from Cyano-HAB Impacts in the Willamette Basin: Tools for Utilities, Local Decision-makers, and Partners*
- Registration is now open for the **April 28th** virtual workshop **Protecting Drinking Water Sources from Cyano-HAB Impacts in the Willamette Basin!** Please **Register Now** on Eventbrite.

# 2021 Message – Please Be Prepared

**EPA R10 is Updating our Internal Freshwater HABs response plan**

**- Are You?**

- See slide 8 for tools and templates to get you started


Drinking Water Response Plan Template Steps
Step 1: Assess Source Water
Step 2: Preparation, Monitoring for Early Warning Signs and Immediate Actions
Step 3: Raw Water Cyanotoxin Monitoring and Treatment Adjustments
Step 4: Finished Water Cyanotoxin Monitoring and Treatment Adjustments
Step 5: Continued Finished Water Cyanotoxin Monitoring, Treatment Adjustments and Public Communication

# 2021 Message – Please Be Prepared Early

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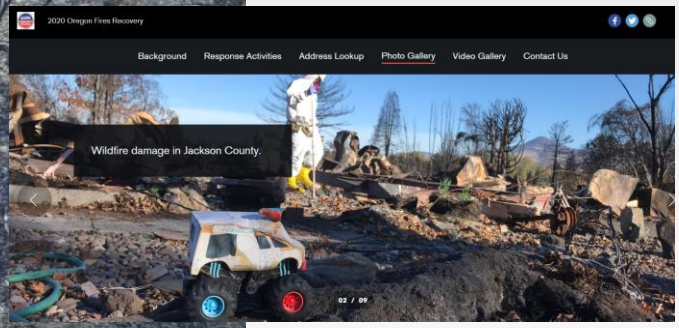
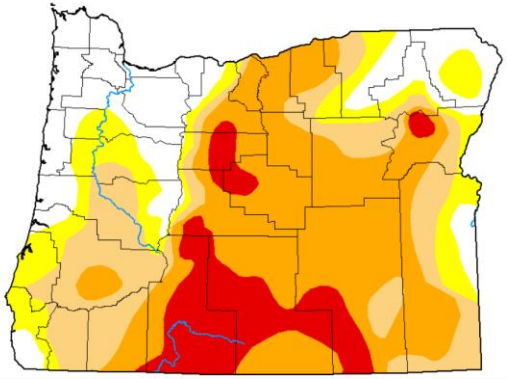



+ Winter Rain

+ Spring Drought



Map released: Thurs. March 4, 2021

Data valid: March 2, 2021 at 7 a.m. EST

Intensity:

- None
- D0 (Abnormally Dry)
- D1 (Moderate Drought)
- D2 (Severe Drought)
- D3 (Extreme Drought)
- D4 (Exceptional Drought)
- No Data

Author(s):

Brian Fuchs, National Drought Mitigation Center

*The Drought Monitor focuses on broad-scale*

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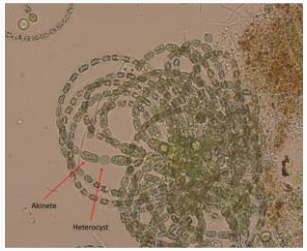


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# Contact Information

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If you need assistance after hours or on weekends, or if Sam or I are unavailable, please contact the Spill Line and they can get support
R10 Spill Hotline (206) 553-1263

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EPA's Cyanobacteria HABs Website
www.epa.gov/cyanohabs