EPA's Activities on Harmful Algal Blooms
PNW/AK Fed Roundtable

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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

EPA R10 HABs program - overview

- EPA R10 – AK, ID, OR, WA and 271 Tribal Nations.
- Multiple staff assist with HABs program implementation
- Two Central POCs in Region 10 - HABs coordinator for national programmatic work and regional ambient waters program; and drinking water treatment lead
- Region 10 Lab has EPA analytical methods set up to run ambient and drinking water samples for three toxins: cylindrospermopsin, anatoxin-a, total microcystins. Third party accredited.
- Primary goal of EPA regional HABs program is to assist state and tribal partners in building capacity to effectively respond to and manage HABs issues. We track events and help provide technical support and assistance. Conduct regional research projects to further inform our understanding.

Guidance Recommendations for Cyanotoxins

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

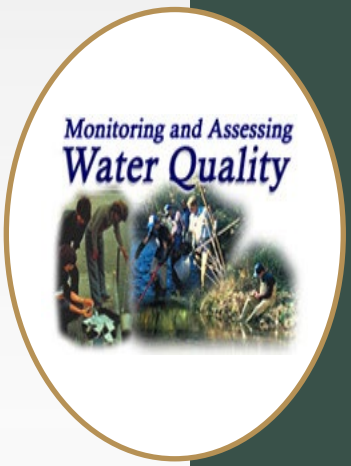
Recommended Human Health Recreational Ambient Water Quality Criteria/Swimming Advisories – May 2019

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

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.
- National Lake Assessment occurred in 2022
- National Rivers and Streams Assessment will occur 2023-2024



EPA's Ambient Water Quality Criteria to Address Nutrient Pollution in Lakes and Reservoirs

- EPA published updated national nutrient criteria recommendations for lakes and reservoirs in 2021
- Hypoxia, microcystins, and zooplankton models can be used to derive chlorophyll *a* criteria, in turn used to derive TN and TP criteria
- Models are stressor-response based
- Models were updated in 2022
- Draft FAQs published for comment until March 13 2023

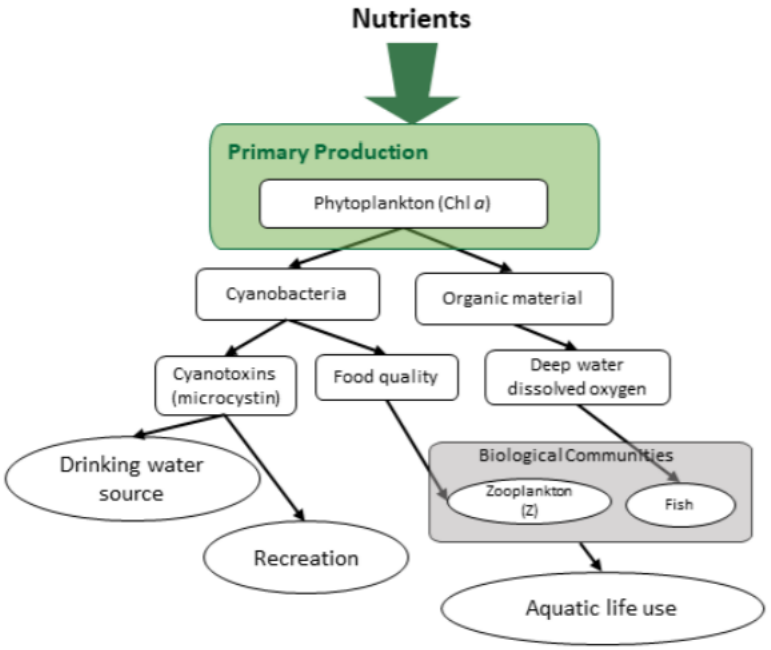


Figure 3. Simplified conceptual model showing pathways selected for analysis.

https://www.epa.gov/nutrient-policy-data/ambient-water-quality-criteria-address-nutrient-pollution-lakes-and-reservoirs

Bipartisan Infrastructure Law Funding Allocated to EPA

FACT SHEET: EPA & The Bipartisan Infrastructure Law

November 6, 2021

Following the passage of the historic Bipartisan Infrastructure Investment and Jobs Act, the U.S. Environmental Protection Agency (EPA) will be making significant investments in the health, equity, and resilience of American communities. With unprecedented funding to support our national infrastructure, EPA will improve people's health and safety, help create good-paying jobs, and increase climate resilience throughout the country.

The single largest investment in water that the federal government has ever made.

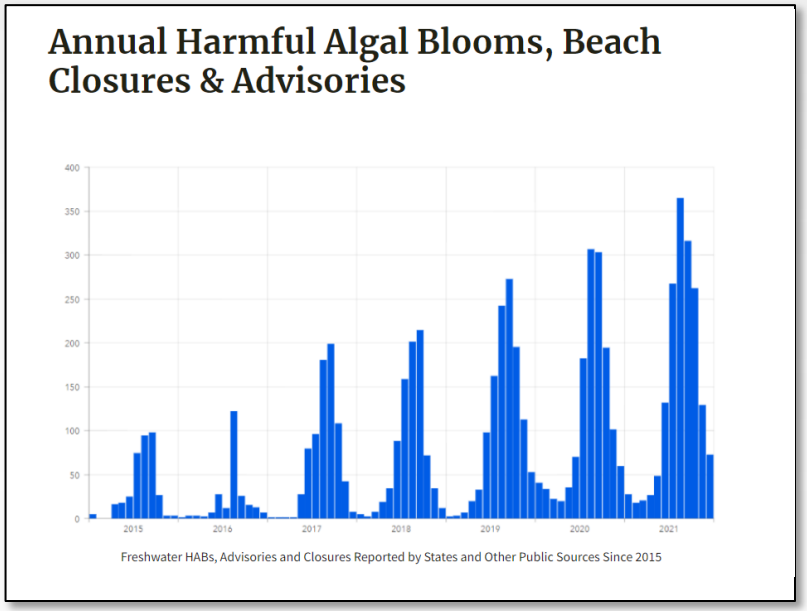
State & Tribal Grants	55.426 billion
Clean Water State Revolving Fund Traditional	11.713 billion
Drinking Water State Revolving Fund Traditional	11.713 billion

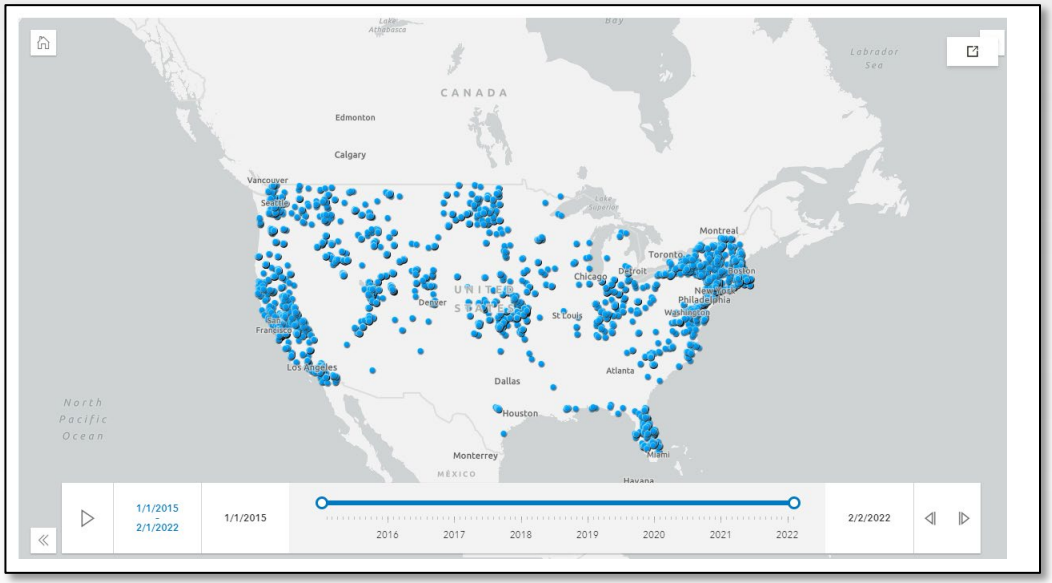
https://www.epa.gov/infrastructure/fact-sheet-epa-bipartisan-infrastructure-law

Clean Water State Revolving Fund FAQs on Emerging Contaminants- includes certain HABs controls

EPA Releases New Memo Outlining Strategy to Equitably Deliver Clean Water Through President Biden's Bipartisan Infrastructure Law

EPA HABs Storymap with Advisories Timeseries





https://storymaps.arcgis.com/stories/d4a87e6cdfd44d6ea7b97477969cb1dd

Additional recent national programmatic developments and tools

- Final CCL5 includes a suite of cyanotoxins
- EPA's CyanoHABs Website
- EPA's Benthic HABs Discussion Group
- EPA Memorandum on Nutrients – April 5, 2022

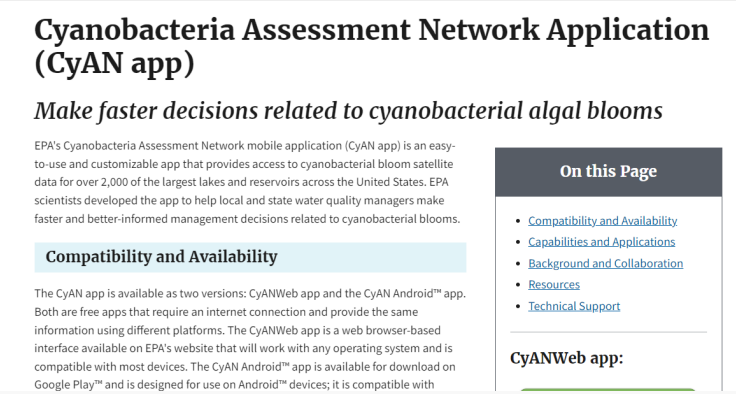
2022 Reported Freshwater HABs Advisories

- ID, OR, WA have monitoring and response programs for freshwater HABs; OR only state with drinking water regulations for vulnerable Public Water Systems
- 2022, ~140 waterbodies with detections with ~16 raw water intakes for PWS with detects (no do not drink advisories issued)
- Anecdotally, ~50% fewer in La Nina than warmer/lower snowpack year
- Note – almost all event monitoring is responsive for cyanotoxins after observed scum/identified bloom and limited to peak bloom period for most waters, May-Nov

	WA	OR	ID	R10 Totals
Total Active/State	1	1	2	4
Total Lifted/State	26	4	15	45
2022 Total Events				49

Regional HABs Research: CyAN AK Data, CONUS Desktop App & Data Analysis

- Development of CyAN satellite data [web app](#) data display tools



Cyanobacteria Assessment Network Application (CyAN app)

Make faster decisions related to cyanobacterial algal blooms

EPA's Cyanobacteria Assessment Network mobile application (CyAN app) is an easy-to-use and customizable app that provides access to cyanobacterial bloom satellite data for over 2,000 of the largest lakes and reservoirs across the United States. EPA scientists developed the app to help local and state water quality managers make faster and better-informed management decisions related to cyanobacterial blooms.

Compatibility and Availability

The CyAN app is available as two versions: CyANWeb app and the CyAN Android™ app. Both are free apps that require an internet connection and provide the same information using different platforms. The CyANWeb app is a web browser-based interface available on EPA's website that will work with any operating system and is compatible with most devices. The CyAN Android™ app is available for download on Google Play™ and is designed for use on Android™ devices; it is compatible with

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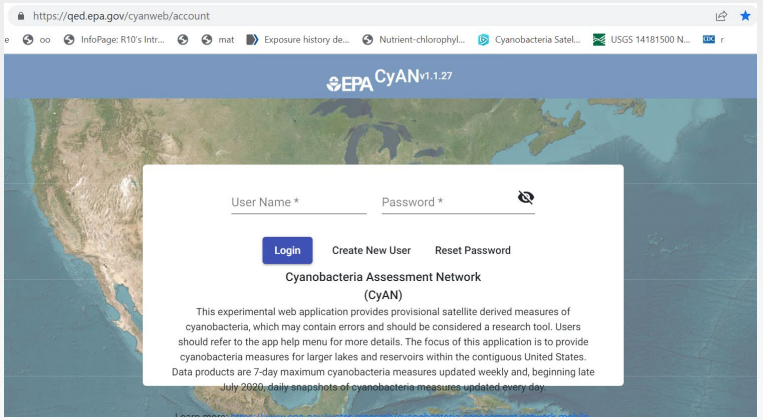
- Background and Collaboration
- Resources
- Technical Support

CyANWeb app:



Some example enhancements - On the fly time series visualization, and data export by polygon (multiple waters)

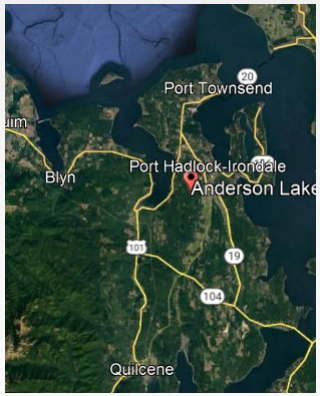
- Improved AK CyAN data availability: https://oceandata.sci.gsfc.nasa.gov/api/cyan_file_search

NASA Releases New Dataset of Cyanobacteria in Over 2,300 Lakes in the U.S.

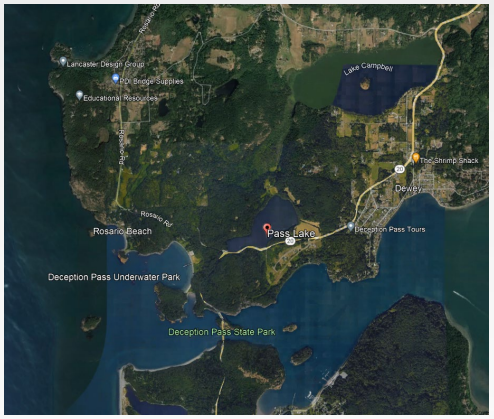
Lakes provide drinking water for people, habitat for plants and wildlife, and a place to fish, boat and swim. But the water can become harmful to humans, animals and the ecosystem when toxic algae called cyanobacteria reach abnormally high levels due to warm, nutrient-rich water conditions.

A now publicly available NASA dataset allows citizens and policymakers to get near-real time updates on the cyanobacteria in over 2,300 lakes in the contiguous United States and more than 5,000 in Alaska. The new study, published in the journal Remote Sensing of Environment, introduces this extensive inland waters dataset that includes a time series of standardized satellite measurements starting in 2002.

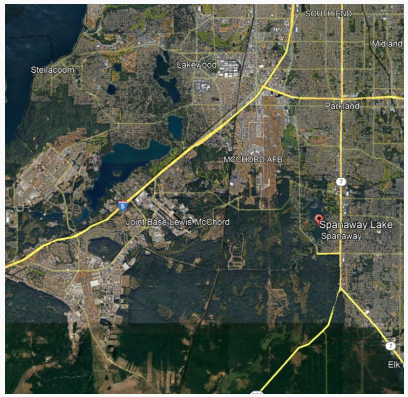
Regional HABs Research: CyanoHABs gene fingerprinting (qPCR) data



Anderson Lake, WA – high concentrations of anatoxin-a and detects of microcystins



Pass Lake, WA anatoxin-a producers (high concentrations certain years) with microcystin detects



Spanaway Lake, WA microcystin producers (high concentrations) with some anatoxin-a detects

Detroit Lake, OR cylindrospermopsin and microcystin producers

Regional HABs Research: Benthic HABs Pilot

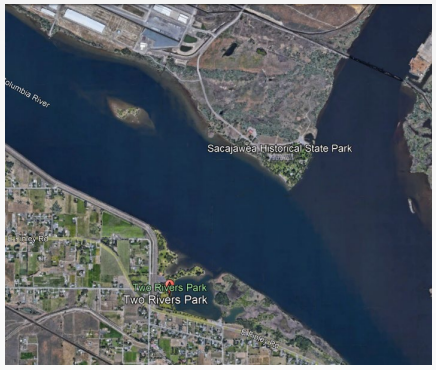
Starting in 2023-2024 – benthic HABs pilot study, Columbia River Tri-Cities- draft list of locations for 2024 (subject to change)

Ringold Boat Launch, Hanford Reach

Leslie Groves Park, Richland, WA

Bateman Island, Richland, WA

Figure 5-2. Trigger level sign.



Two Rivers Park, Kennewick WA

Contact Information

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For urgent after-hours issues please contact the EPA Spill Hotline: 206-553-1263; select the menu option for Regional Duty Officer
EPA's Cyanobacteria HABs Website
www.epa.gov/cyanohabs

Extra Background Slides