

# Harmful Algal Blooms (HABs) Newsletter



## EPA Updates!

*HABs News, Research, Resources, and Tools*

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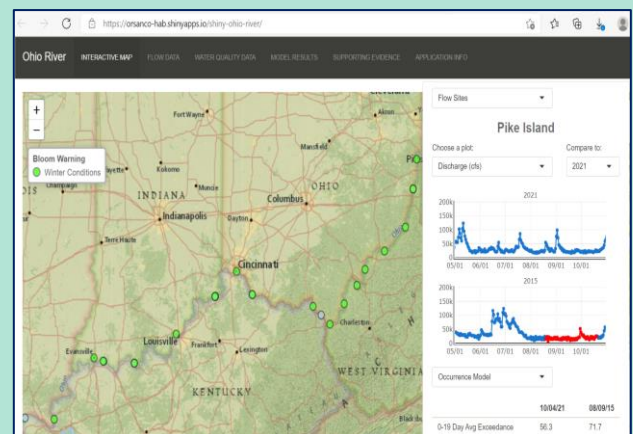
More HABs information is available on EPA's [CyanoHABs in Water Bodies website](#)

## EPA Develops a Risk Characterization Tool for Harmful Cyanobacteria Blooms on the Ohio River

EPA, in partnership with the Ohio River Valley Water Sanitation Commission (ORSANCO), developed a data-driven approach to characterize the risk of cyanoHABs for the Ohio River.

Two Bayesian regression models were developed based on the antecedent flow conditions of the

two blooms that occurred on the river in 2015 and 2019: one predicts whether there will be a bloom in the current year (the occurrence model), and another predicts bloom persistence (the persistence model). Prediction probabilities are provided in real time as a component of a risk characterization tool using a web application (app). In addition to presenting the results of the models, the tool offers diagnostic visualization options for studying water quality trends related to factors known to affect cyanoHAB dynamics. The tool organization was based on the practices used by water quality managers to make decisions about when and where to sample and to communicate potential risks of river conditions to stakeholders. The app is available online on the ORSANCO website: <https://orsanco-hab.shinyapps.io/shiny-ohio-river/#>.



An article detailing EPA's development of the app to predict HABs on the Ohio River was recently published in the journal *Water*:

[Development of a Risk Characterization Tool for Harmful Cyanobacteria Blooms on the Ohio River](#) Nietch, CT., Gains-Germain, L., Lazorchak, J., Keely SP., Youngstrom, G., Urlichich, EM., Astifan, B., DaSilva, A., and Mayfield, H. *Water*, 2022; 14(4):644.

## [New Version of bloomWatch App and Bloom Report Dashboard in Spanish Now Available](#)

A new version (Version 4.7) of BloomWatch, an app to engage the public in reporting when and where potential cyanobacteria blooms appear, was recently released in the App Store for iPhone and the Google Play store for Android. This new version includes improvements such as a better layout for data submission and email communication, and a language choice of English or Spanish. More information on BloomWatch is available in the [Cyanobacteria Monitoring Collaborative Website](#).

## [Guidelines for Canadian Recreational Water Quality - Cyanobacteria and their Toxins](#)

On February 18, Health Canada released their final guideline technical document on Cyanobacteria and their Toxins as part of the Guidelines for Canadian Recreational Water Quality. These technical documents provide guideline values for cyanobacteria and their toxins, and recommend monitoring and risk management strategies. The final document is posted on [Health Canada's Website](#).

## [Call for Papers: AWWA Special Issue on Harmful Algal Blooms](#)

The American Water Works Association (AWWA) is requesting papers for a special issue of *AWWA Water Science* on the state of the science on HABs and drinking water. In addition to general research topics related to HABs, specific topics of interest include:

- Source water monitoring and control strategies
- Treatment technologies and approaches
- New analytical methods and sensors for cyanobacteria and cyanotoxins
- Disinfection/oxidation byproducts
- Taste and odor issues
- Regulatory requirements and compliance
- Risk assessment
- Case studies of freshwater and marine HABs that impact drinking water systems
- Effects of climate change relevant to HABs and drinking water systems
- Communications and outreach

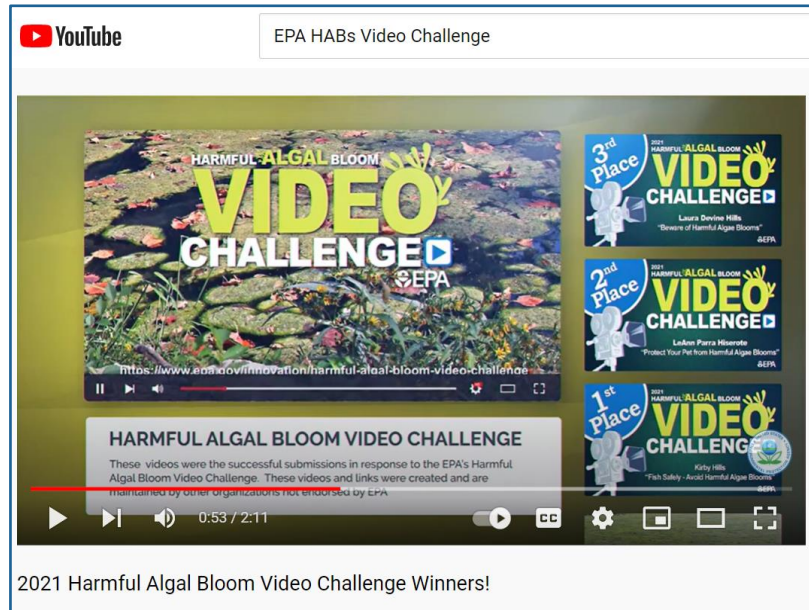
The deadline for submissions is July 1, 2022.

## [4th Request for Proposals for the Florida Red Tide Mitigation and Technology Development Initiative](#)

The Red Tide Mitigation and Technology Development Initiative is a partnership between Mote Marine Laboratory and the Florida Fish and Wildlife Conservation Commission. It aims to establish a coordinated effort among public and private research entities to develop prevention, control, and mitigation technologies and approaches that will decrease the impacts of Florida red tide on the environment, economy, and quality of life in Florida. The Request for Proposal is open until April 15. More information is available in the [Proposal Guidelines](#) document.

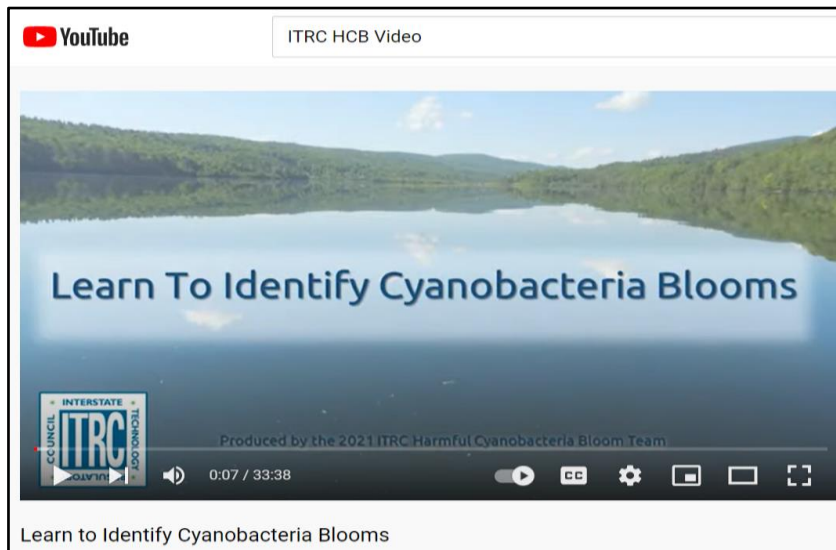
## [USACE's Interagency Freshwater HAB Research & Development Workshop](#)

The U.S. Army Corps of Engineers (USACE) will host a second "Interagency Freshwater HAB Research & Development Workshop" on March 29-31, 2022. The workshop objective is to share and discuss HABs Research initiatives and lessons learned between interested federal and state partners, including highlighting emerging efforts and critical implementation needs.



## 2021 HAB Video Challenge Winners!

EPA Region 7 has created a video announcing the winners from the 2021 “See a Bloom, Give It Room” Video Challenge. The theme for the 2021 competition was urban waters located in the Kansas City, Missouri, metropolitan area. The competition was supported by EPA’s Office of Research and Development and calls for videos that promote public awareness of HABs through creative filmmaking. [View the video.](#)



## ITRC-HCB team’s Harmful Cyanobacteria Video

The Interstate Technology Regulatory Council’s (ITRC) Harmful Cyanobacterial Blooms (HCB) team, with support from the Lake Champlain Basin Program, developed the *Learn to Identify Cyanobacteria Blooms* video which identifies and describes different types of cyanobacteria and offers guidance on best management and safety practices involving harmful blooms. View ITRC’s guidance, [Strategies for Preventing and Managing Harmful Cyanobacteria.](#)

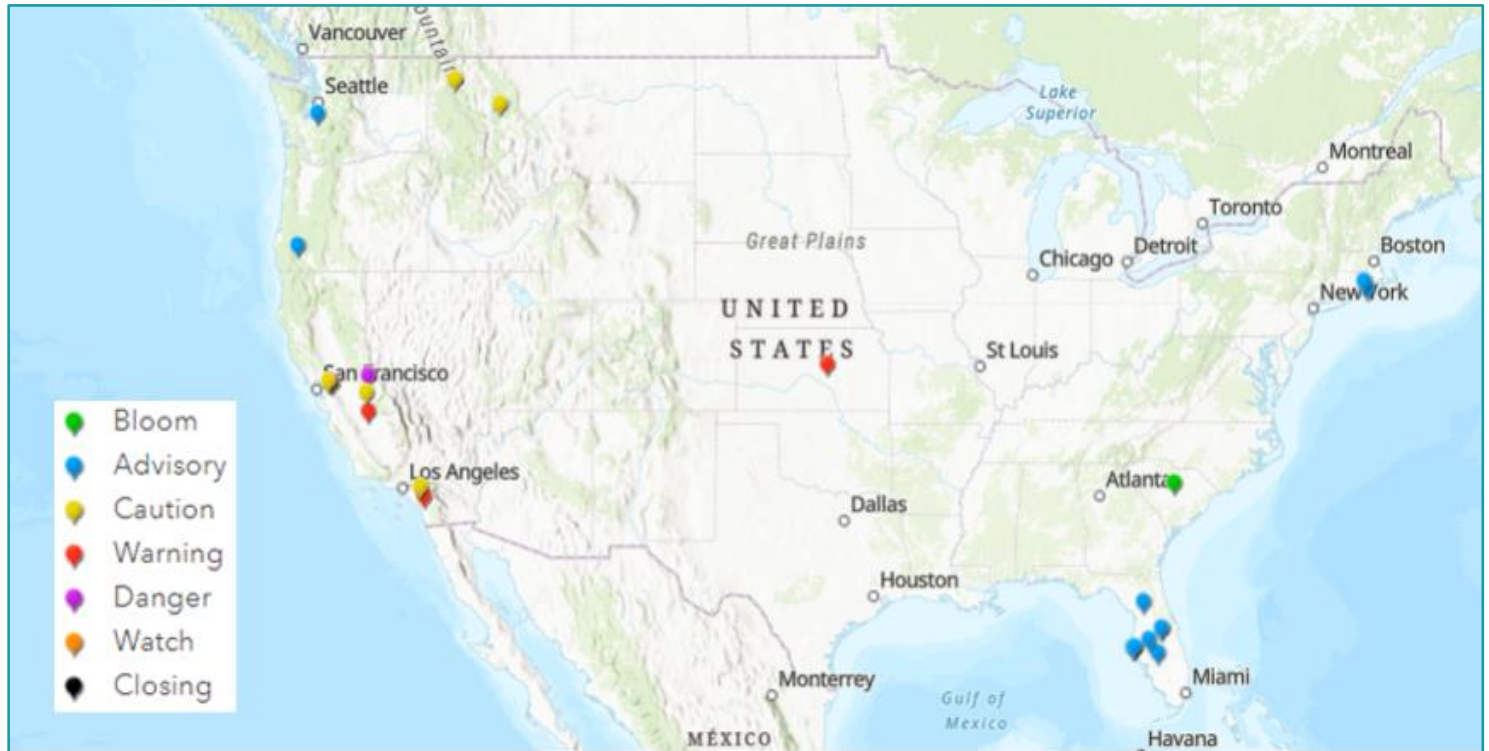




# Reported Blooms, Beach Closures, and Health Advisories\* - February 2022

*\*Includes blooms, cautions, warnings, public health advisories, closings, and detections over state thresholds due to the presence of algae and or/toxins. This is not a comprehensive list; not all blooms have been reported and/or not all lakes are actively monitored.*

Go to EPA's interactive [Tracking CyanoHABs Story Map](#) to access the data points underlying the map and for more information.



Click the state name to see the reported blooms for the month of February 2022:

[California \(9\)](#) ; [Florida \(9\)](#); [Kansas \(1\)](#); [Montana \(2\)](#); [Oregon \(1\)](#); [Rhode Island \(2\)](#); [South Carolina \(1\)](#); [Washington \(1\)](#)

## Upcoming Virtual Events

[12<sup>th</sup> International Conference on Toxic Cyanobacteria](#)

May 22-27, 2022 in Toledo, Ohio

[Pathogens and Natural Toxins e-Conference](#)

July 1 - August 31, 2022

[GlobalHAB symposium on automated in situ observations of plankton](#)

August 22-26, 2022

Registration Deadline: March 15, 2022

[U.S. Symposium on Harmful Algae](#)

October 23-28, 2022 in Albany, NY

Abstract Deadline: May 6, 2022

## Upcoming Webinars

[Making Community Science Work](#)

March 16, 3:00-4:15pm EST

Hosted by the HAB Observing Group to discuss the importance of community science for HABs, share successes and challenges of HAB community/citizen science, and address how a National HAB Observing Network (NHABON) can assist.

[Accumulation and Effects of HABs on Fish and Shellfish](#)

March 22, 12:00 - 4:00pm EST

Hosted by EPA's Office of Science and Technology to discuss important issues on the occurrence and effects of HABs, with emphasis on cyanotoxins in freshwater and marine fish and shellfish.

## Additional Useful Resources

[Recorded Webinar](#)

Benthic HABs Discussion Group

February 8, 2022

[Presentations Slides](#)

For more information visit the [EPA's Benthic Discussion Group webpage](#)

## Recently Published Articles\*

[Harmful Algae News No. 69](#) Special issue on the 19th International Conference on Harmful Algae.

[Nitrogen-enriched discharges from a highly managed watershed intensify red tide \(\*Karenia brevis\*\) blooms in southwest Florida](#)

Miles Medina, David Kaplan, Eric C. Milbrandt, Dave Tomasko, Ray Huffaker, Christine Angelini, Science of The Total Environment, 2022, 154149.

[The cyanotoxin cylindrospermopsin slows down cell cycle progression and extends metaphase duration in immortalised human airway epithelial cells](#)

Janita Vennmann, Julia Edelmann, Celine Gudra, Sabine Ziesemer, Jan-Peter Hildebrandt, Toxicon, Volume 209, 2022, Pages 28-35.

[Chapter 20 - Dynamics of harmful cyanobacterial blooms and their toxins: environmental and human health perspectives and management strategies](#)

Anjali Singh, Piyoosh Kumar Babele, Editor(s): Prashant Kumar Singh, Ajay Kumar, Vipin Kumar Singh, Alok Kumar Shrivastava, Advances in Cyanobacterial Biology, Academic Press, 2020, Pages 301-317.

[Removal of microcystin \(MC-LR\) in constructed wetlands integrated with microbial fuel cells: Efficiency, bioelectricity generation and microbial response](#)

Rui Cheng, Hui Zhu, Jingfu Wang, Shengnan Hou, Brian Shutes, Baixing Yan, Journal of Environmental Management, Volume 309, 2022, 114669.

[Male reproductive toxicity induced by Microcystin-leucine-arginine \(MC-LR\)](#)

Guanghui Xu, Yang Luo, Dihui Xu, Yuhan Ma, Yabing Chen, Xiaodong Han, Toxicon, Volume 210, 2022, Pages 78-88.

[Synergistic toxicity to the toxigenic \*Microcystis\* and enhanced microcystin release exposed to polycyclic aromatic hydrocarbon mixtures](#)

Xiang Wan, Qingchun Guo, Xiaojun Li, Guoxiang Wang, Yanyan Zhao, Toxicon, Vol. 210, 2022, Pages 49-57.

[Salt-alkalization may potentially promote \*Microcystis aeruginosa\* blooms and the production of microcystin-LR](#)

Jing Yu, Hui Zhu, Brian Shutes, Xinyi Wang, Environmental Pollution, Volume 301, 2022, 118971.

[Degradation of microcystin-LR with expanded graphite based photocatalysts: Performance and mechanism based on active sites-radicals interaction](#)

Xin Wang, Xuejiang Wang, Hui Wang, Qiang Wang, Jingke Song, Fuming Chen, Separation and Purification Technology, Volume 288, 2022, 120674.

[Sorption of microcystin-RR onto Surface Soils: Characteristics and Influencing Factors](#)

Bai-Lin Liu, Yan-Wen Li, Li-Si Xie, Jing-Jie Guo, Lei Xiang, Ce-Hui Mo, Journal of Hazardous Materials, 2022, 128571.

[Microplastics benefit bacteria colonization and induce microcystin degradation](#)

Yixin He, Guining Wei, Bingran Tang, Muhammad Salam, Ai Shen, Yanyan Wei, Xin Zhou, Mengzi Liu, Yongchuan Yang, Hong Li, Yufeng Mao, Journal of Hazardous Materials, Volume 431, 2022, 128524.

[Nanozyme enhanced paper-based biochip with a smartphone readout system for rapid detection of cyanotoxins in water](#)

Jinchuan Liu, Yunpeng Xing, Boyuan Xue, Xiaohong Zhou, Biosensors and Bioelectronics, Volume 205, 2022, 114099.

\*Articles are retrieved monthly from Science Direct research database searching for the following key words: cyanobacteria, cyanotoxins, harmful algal blooms, and HAB(s).



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