



Harmful Algal Blooms (HABs) Newsletter



EPA Updates!

HABs News, Research, Resources, and Tools

In this issue

EPA Updates **P.1**

News **P.2**

HABs Advisories **P.3**

Useful Resources **P.3**

Upcoming Events **P.3**

Recenty Published Articles **P.4**

Mention of trade names, products, or services in this newsletter does not convey and should not be interpreted as conveying official EPA endorsement, approval, or recommendation for use.

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

Prepare for Bloom Season!

Many areas of the country begin to experience cyanobacterial blooms in the spring. Waterbody managers and public water systems that intake from at-risk waters can begin preparing now to prevent and respond to potential blooms. Here are some EPA resources to assist in managing HABs in recreational waters and drinking water:

Drinking and Recreational Waters

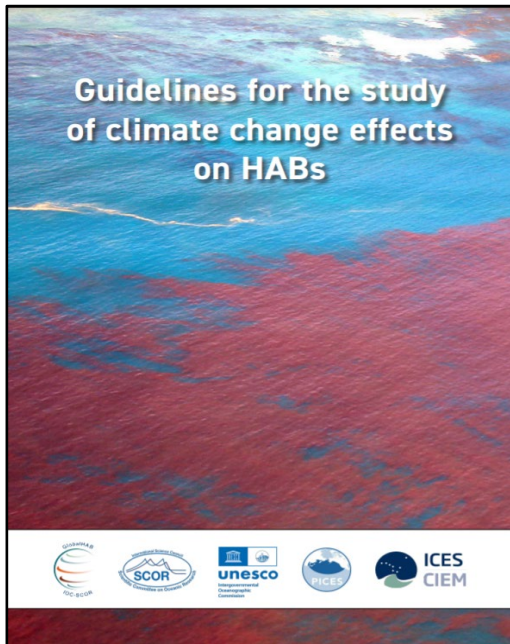
- [Cyanotoxins Preparedness and Response Toolkit \(CPRT\)](#)
- [EPA HABs Incident Action Checklist](#)
- [List of Laboratories Conducting Cyanotoxin Analysis](#)

Drinking Water

- [Health Advisories for Cyanotoxins in Drinking Water](#)
- [Recommendations for Public Water Systems to Manage Cyanotoxins in Drinking Water](#)
- [Analytical Methods for Cyanotoxins](#)
- [Treatment Techniques for Cyanotoxins in Drinking Water](#)
- [Water Treatment Optimization for Cyanotoxins Document](#)
- [Drinking Water Cyanotoxin Risk Communication Toolbox](#)

Recreational Waters

- [Recommended Human Health Recreational Ambient Water Quality Criteria or Swimming Advisories for Microcystins and Cylindrospermopsin](#)
- [Final Technical Support Document: Implementing 2019 Recommended Recreational Criteria or Swimming Advisories for Microcystins and Cylindrospermopsin](#)
- [Recommendations for Cyanobacteria and Cyanotoxin Monitoring in Recreational Waters](#)
- [Recreational Water Communication Toolbox for Cyanobacterial Blooms](#)
- [Control Measures for CyanoHABs in Surface Waters](#)



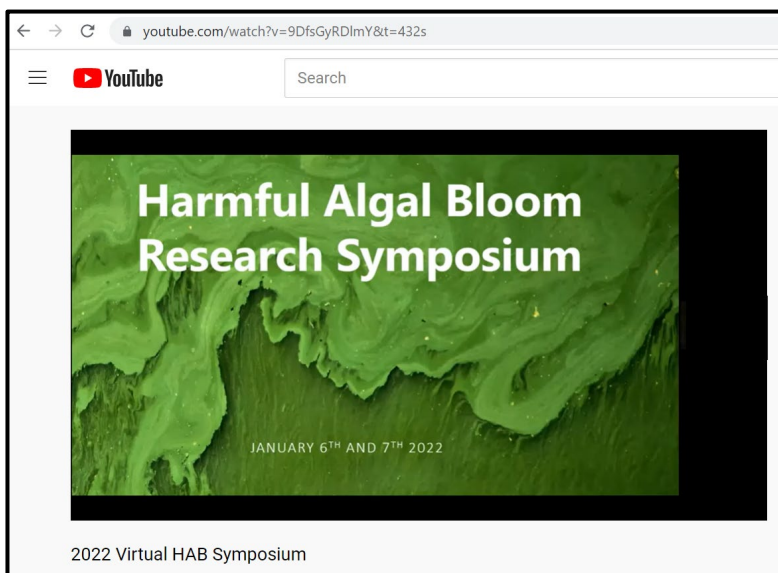
GEOHAB's *Guidelines to Conduct Climate Change Research* Recently Released

GEOHAB, a joint SCOR-IOC international research programme on the Global Ecology and Oceanography of Harmful Algal Blooms of UNESCO, recently released guidelines to communicate standardized strategies, tools, and protocols to assist researchers who are studying climate change drivers and HAB prevalence in aquatic ecosystems.

These guidelines represent a first step that will help inform HAB scientists, students, and otherscientists seeking to incorporate the study of HABs into larger ongoing ocean and freshwater observational studies.

Second Annual Virtual Harmful Algal Bloom (HAB) Research Symposium

The Algal Bloom Action Team of the North Central Region Water Network hosted the 2nd Annual Virtual HABs Research Symposium on January 6th and 7th, 2022.



Watch recordings for the four sessions of the symposium:

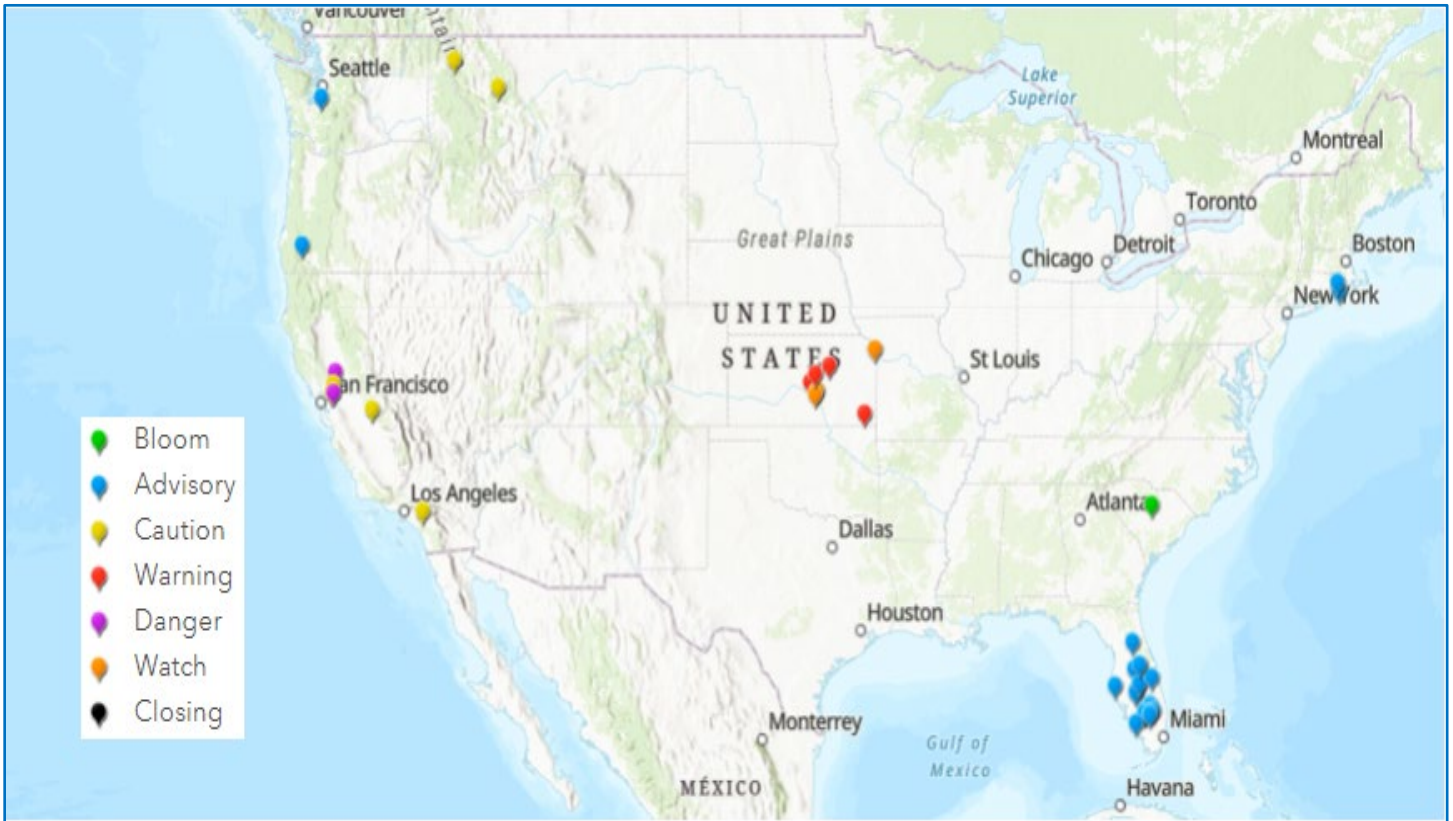
- [Cyanotoxin Treatment and Detection](#)
- [Forecasting and Modeling Harmful Algal Blooms](#)
- [Emerging Technologies for Detection and Monitoring](#)
- [HAB Monitoring and Ecology](#)



Reported Blooms, Beach Closures, and Health Advisories* - January 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 January 2022:

[California \(6\)](#); [Florida \(13\)](#); [Kansas \(7\)](#); [Montana \(2\)](#); [Oregon \(1\)](#); [Rhode Island \(2\)](#); [South Carolina \(1\)](#); [Washington \(1\)](#)

Upcoming Virtual Events

12th International Conference on Toxic Cyanobacteria

May 22-27, 2022, Toledo, Ohio
Abstract Deadline: January 15, 2022
Early Registration: March 1, 2022

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, Albany, New York
Abstract Deadline: May 6, 2022

Additional Useful Resources

February 8, 2022

Benthic HABs Discussion

Group Webinar

[Agenda](#)

[Webinar Registration](#)

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

Recently Published Articles*

Sublethal exposure to *Microcystis aeruginosa* extracts during embryonic development reduces aerobic swimming capacity in juvenile zebrafish

Emmanolia Sergi, Michail Orfanakis, Anastasia Dimitriadi, Maria Christou, Anthi Zachopoulou, Chara Kourkouta, Alice Printzi, Sevasti-Kiriaki Zervou, Pavlos Makridis, Anastasia Hiskia, George Koumoundouros, *Aquatic Toxicology*, Volume 243, 2022, 106074.

Harmful algae and climate change on the Canadian East Coast: Exploring occurrence predictions of *Dinophysis acuminata*, *D. norvegica*, and *Pseudo-nitzschia seriata*

Aude Boivin-Rioux, Michel Starr, Joël Chassé, Michael Scarratt, William Perrie, Zhenxia Long, Diane Lavoie, *Harmful Algae*, Volume 112, 2022, 102183.

A review of the current and emerging detection methods of marine harmful microalgae

Fuguo Liu, Chunyun Zhang, Yuanyuan Wang, Guofu Chen, *Science of The Total Environment*, Volume 815, 2022, 152913.

Simultaneous electrochemical removal of *Microcystis aeruginosa* and sulfamethoxazole and its ecologic impacts on *Vallisneria spiralis*

Xiaonan Tang, Alan D. Steinman, Qingju Xue, Yan Xu, Liqiang Xie, *Science of The Total Environment*, Volume 815, 2022, 152769.

Cytochrome P450s in algae: Bioactive natural product biosynthesis and light-driven bioproduction

Shanmin Zheng, Jiawei Guo, Fangyuan Cheng, Zhengquan Gao, Lei Du, Chunxiao Meng, Shengying Li, Xingwang Zhang, *Acta Pharmaceutica Sinica B*, 2022.

Transcriptomic analysis dissects the regulatory strategy of toxic cyanobacterium *Microcystis aeruginosa* under differential nitrogen forms

Xiaolong Yang, Yonghong Bi, Xiaofei Ma, Wei Dong, Xun Wang, Shoubing Wang, *Journal of Hazardous Materials*, Volume 428, 2022, 128276.

Atmospheric chemical processes of microcystin-LR at the interface of sea spray aerosol

Minglan Xu, Narcisse T. Tsona, Jianlong Li, Lin Du, *Chemosphere*, 2022, 133726.

Potential influence of overwintering benthic algae on water quality

Lefan Yao, Yuansheng Huang, Lei Chen, Yiliang He, *Journal of Environmental Sciences*, 2022.

Benthic cyanobacteria: A utility-centred field study

Virginie Gaget, Husein Almuhtaram, Faith Kibuye, Peter Hobson, Arash Zamyadi, Eric Wert, Justin D. Brookes, *Harmful Algae*, Volume 113, 2022, 102185.

Coupling the socio-economic and ecological dynamics of cyanobacteria: Single lake and network dynamics

Christopher M. Heggerud, Hao Wang, Mark A. Lewis, *Ecological Economics*, Volume 194, 2022, 107324.

Gene expression of glutathione S-transferase alpha, glutathione S-transferase rho, glutathione peroxidase, uncoupling protein 2, cytochrome P450 1A, heat shock protein 70 in liver of *Oreochromis niloticus* upon exposure of microcystin-LR, microcystin-RR and toxic cyanobacteria crude

Abdullah S.M. Aljohani, Ahmed A. Ahmed, Sami A. Althwab, Abdullah S. Alkhamiss, Zafar Rasheed, Nelson Fernández, Waleed Al Abdulmonem, *Gene Reports*, Volume 26, 2022, 101498.

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



Would you or a colleague like to sign up to receive future issues of this newsletter?
Simply send an email to epacyanohabs@epa.gov