

Harmful Algae Blooms and Drinking Water: What you need to know



IMPORTANT INFORMATION FOR SURFACE WATER DRAWERS

The Canandaigua Lake Watershed Association (CLWA) is striving to provide homeowners who draw water directly from the lake, or who are using a home treatment system where water does not come from a public treatment plant, with information and resources to promote safe drinking water and residential best use practices.

Inside this publication, you will find information about Canandaigua Lake water quality, including harmful algae blooms (HABs) and lake foam. We encourage watershed residents to become informed about HABs and the ways it may impact their drinking water.

Share this newsletter to help your family and pets stay healthy and make informed decisions. Place the poster inserted in this newsletter in a prominent place in your home or rental.

Harmful Algae Blooms (HABs) can produce toxins dangerous to people and pets.

Canandaigua Lake, and other regional lakes, are experiencing seasonal cyanobacteria (sometimes referred to as blue-green algae, or harmful algae blooms). HABs can occur quickly and can be potentially harmful to people and pets.

Cyanobacteria naturally occur in our surface waters. Certain conditions such as warmer water temperatures, increased nutrients (primarily nitrogen and phosphorus), and calm water conditions can cause cyanobacteria to grow rapidly, producing "blooms".

Contact with cyanotoxins can cause diarrhea, vomiting; skin, eye or throat irritation and allergic reactions or breathing difficulties. Animal illnesses and deaths can occur when animals consume large amounts of accumulated algal scum from along shorelines or when they groom blue-green algae scum from their fur. Swimmers and recreational water users should follow the mantra "look before you leap" during the HAB season.

If you draw household and drinking water from the lake, become informed.

Conventional water treatment in public water systems (consisting of coagulation, sedimentation, filtration and chlorination) can remove intact cyanobacterial cells and low levels of cyanotoxins from source waters. However, even public water systems may face challenges in providing drinking water during a severe bloom event with high levels of cyanobacteria and cyanotoxins present.

Residents drawing water directly from the lake face further challenges when there are high levels of cyanobacteria and cyanotoxins present due to the varying capabilities of our household treatment units to remove cyanotoxins.

Please read the enclosed information to review frequently asked questions on drinking water and HABs.

Canandaigua Lake
Watershed Association

PO Box 323
Canandaigua, NY 14424
canandaigualakeassoc.org

Visit us on Facebook and
Instagram!

FAQs about Harmful Algae Blooms and Drinking Water

What are the risks of drawing surface water for drinking and household use?

The New York State Department of Health has issued information for people not able to connect their homes to a public water supply or to a drilled well for their drinking water. These people use a surface water source such as a lake, river, stream or spring for household water. Never drink, prepare food, cook, or make ice with untreated surface water, bloom or no bloom. Untreated surface water might contain cyanobacteria and their toxins as well as other bacteria, parasites or viruses that can cause symptoms such as diarrhea, nausea and vomiting.

Young children, pregnant women, older adults and people with health issues are at higher risk from symptoms associated with these drinking water contaminants. If you must wash dishes with untreated surface water, rinse with bottled water. You may also consider not using it during a bloom for showering, bathing or washing, especially if your water looks cloudy.

We have a private water system. What precautions should we take during an active bloom?

The poster inserted with this newsletter shows pictures of HABs. Even if you are treating surface water yourself, please be advised that boiling the water will not remove cyanobacteria or their toxins during a bloom. As the Department of Health recommends, always use bottled water during a bloom.

Take precautions if your water looks cloudy coming out of the tap or water pressure changes. This could indicate that your water contains cyanobacteria as well as bacteria, parasites or viruses that can cause illness.

Contact your local health department if you have questions about your water. Find contact information at health.ny.gov/EnvironmentalContacts.

How will we know if there is an outbreak on Canandaigua Lake?

The NYS Department of Health will notify the public if municipal water systems have been affected by the toxins associated with HABs, and of beach closures on the lake. Local news sources usually cover the advisories. These advisories can signal the need for those using private treatment systems to also take precautionary measures as advised by the Department of Health.

The Canandaigua Lake Watershed Association and the Canandaigua Lake Watershed Council strive to provide current information on lake conditions by sending email blasts and posting notifications on the CLWA Facebook page. Sign up for the CLWA mailing list: <https://www.canandaigualakeassoc.org/get-involved/sign-up-for-e-news/>.

The New York State Department of Environmental Conservation (DEC) lists HABs affected waterbodies at NYHABs: www.dec.ny.gov/chemical/83310.html.

We have no option but an in-home treatment system. What can we do to ensure safety?

With in-home treatment systems, you are living with some risk of exposure to harmful cyanobacteria and their toxins as well as other contaminants.

Water treatment systems that use some combination of ozone, chlorine, carbon filtration and reverse osmosis may reduce some cyanobacteria and their toxins. Ultraviolet light, chloramines, water softeners and boiling water may not reduce algal toxins.

Please work with a water treatment professional that can evaluate credible third-party certifications of equipment, such as the National Sanitation Foundation standard (NSF P477). The professional should consider your household needs and design and size a system appropriately. Once designed, your water treatment professional should work with you to develop a plan to evaluate and maintain your system. A system that is not maintained can result in failure of water treatment and loss of water pressure.

Does CLWA recommend any professional in-home system installers?

We do not. Each system is unique, as are the needs of each household.

What to do during a HAB event.

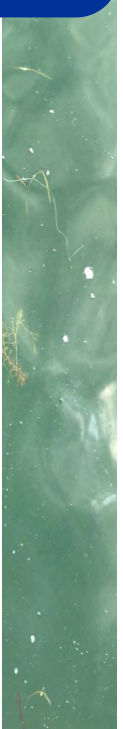
- Never drink, prepare or cook food, or make ice with untreated surface water. Consider not using it during a bloom for bathing, especially if your water looks cloudy or if a HABS advisory has been issued.
- Use bottled water during a bloom, even if you have an in-home treatment system. Boiling water will not remove algal toxins.
- Store enough bottled drinking water for three days. It is recommended to keep a three-day supply of bottled water on hand in the event that toxins are present in your drinking water or an emergency arises, such as a violent storm. It is recommended you have one gallon of water for each person (and pet) in your household. For example, if there are three people in your household, you would need three gallons of water for three days, a total of nine gallons.
- Keep people and animals away from blooms in surface waters. Don't swim, wade, boat, fish or eat fish caught from areas near blooms.
- Consider visiting a health care provider if you, a family member or pets experience symptoms that might be related to harmful algae bloom exposure.
- Report bloom-related symptoms to the NYS Department of Health at harmfulalgae@health.ny.gov. You can also use the local health department phone numbers included on the enclosed poster.
- Report blooms to New York State Department of Environmental Conservation at NYHABS: <https://www.dec.ny.gov/chemical/83310.html>.

How to protect against future blooms.

- Connect to public water if possible. Public water is the best option for drinking, preparing and cooking food, making ice, washing and bathing, because water suppliers are required to treat, disinfect and monitor water for customers.
- Contact your local water treatment professional and have them do a full assessment of your current water treatment system to see if there are additional measures of protection that can be added to your existing system.
- Consider installing a private well. The New York State Department of Environmental Conservation maintains a list of Registered Water Well Contractors. To find an approved water well contractor your area go to www.dec.ny.gov/lands/33317.html

Stay informed about Water Quality.

- Become a member of CLWA to help support water quality research and public advocacy efforts. Visit canandaigualakeassoc.org to join!
- Sign up to receive email blasts from the Canandaigua Lake Watershed Association by going to www.canandaigualakeassoc.org and clicking on "Sign Up for E-News". The CLWA, along with our partners at the Canandaigua Lake Watershed Council, strives to send out timely water quality updates during an active bloom situation.
- Review the interactive map of HABs reported on Canandaigua Lake to see if blooms are in your area. CLWA has 41 volunteers actively monitoring the shoreline for blooms and reporting their findings on the CLWA website.
- Visit the Canandaigua Lake Watershed Council website for more information on the programs to protect water quality: <https://www.canandaigualake.org/>
- Review the NYS Department of Health and the NYS Department of Environmental Conservation websites regularly for updates and additional resources.
- Share the enclosed HABs flyer to help spread the word about HABs to neighbors and visitors. If you are renting your cottage, please consider including this in your information binder.
- Read the enclosed fact sheet on lake foam—one of the most frequent water quality inquiries to CLWA.



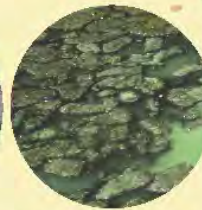
LOOK OUT FOR HARMFUL ALGAL BLOOMS

A **harmful algal bloom (HAB)** is an overgrowth of algae in a water body that could affect water quality and aquatic life. Some HABs produced by bacteria can create toxins that may also harm people, animals, and the local environment.



HOW TO IDENTIFY A HARMFUL ALGAL BLOOM

Algal blooms can make the water appear green, blue, brown, gold, or red.



Seeing colors, scum, mats, foam, or paint-like streaks in the water or clumps on the shore may indicate a bloom. However, only professional water testing can confirm if HABs and toxins are present. States often have monitoring programs for this purpose.



EXPOSED?

Shower immediately.
See a doctor or vet if
symptoms occur.

SYMPTOMS OF EXPOSURE

Vary depending on how the person or animal was exposed, and whether the HAB is in salt or fresh water.



Ear, eye, headache,
nose, skin and
throat irritation



Paralysis,
respiratory illness
and seizures



Abdominal pain,
diarrhea, liver and
kidney damage and
vomiting



Drooling, diarrhea,
low energy, not
eating, stumbling,
tremors and vomiting

WHEN IN DOUBT, STAY OUT!

Stay away from the water when a suspected HAB is present.



DON'T
Play with scum
or mats on
the shore



DON'T
Let animals
drink water, eat
algae or swim



DON'T
Swim



DON'T
Fish or wade



DON'T
Boat or kayak

TO REPORT POSSIBLE HARMFUL ALGAL BLOOMS:

Email: HABs@canandaigualakeassoc.org

TO REPORT PET OR HUMAN HEALTH RELATED SYMPTOMS IN ONTARIO COUNTY:

(585) 396-4343

TO REPORT PET OR HUMAN HEALTH RELATED SYMPTOMS IN YATES COUNTY:

(315) 536-5160



CANANDAIGUA LAKE
WATERSHED ASSOCIATION

Foam Study Summary: Canandaigua Lake

Conducted by Global Aquatic Research | August 2020

Global Aquatic Research (GAR) and the Canandaigua Lake Watershed Association (CLWA) surveyed and sampled lake foam with the help of citizen scientists throughout the late summer and fall of 2019.

NEW RESEARCH CONDUCTED

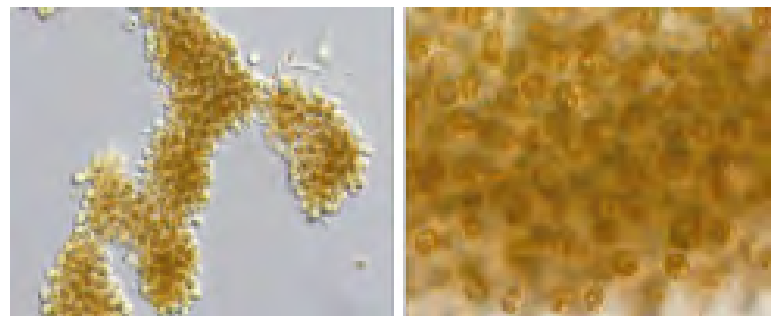
- Many chemical analyses were performed on the foam and the results were compared with the chemical signatures of tributary streams, lake water, invasive mussels, plankton, and seaweed, in order to identify the source of the foam.
- Carbon isotope and fatty acid signatures indicate the source of the foam comes from within the lake.
- Very high concentrations of carbon and low concentrations of nitrogen in the foam suggest it is enriched in one type of biological component that is low in nitrogen. This means that invasive mussel proteins are not the source.
- FTIR (fourier-transform infrared spectroscopy), an advanced technique used to identify organic substances, indicated the foam is primarily made of carbohydrates, in particular polysaccharides, which are long chains of sugars. A range of aquatic organisms commonly produces these, but the FTIR signature of the foam was most similar to the phytoplankton sample from the lake.
- All measurements were consistent with *Microcystis* algae, the cyanobacteria that are responsible for the harmful algal blooms (HABs) and produce the microcystin toxins responsible for beach closures, as the source of these foam-causing polysaccharides.

WHAT'S GOING ON IN THE LAKE?

- Plankton, which include all microscopic plants and animals suspended in the lake water, are filtered by the invasive zebra and quagga mussels. *Microcystis* cyanobacteria are a poor food source for the mussels. The mussels eat other plankton and spit the cyanobacteria out. Over time this selectively concentrates the cyanobacteria in the water.
- Phosphorous and nitrogen concentrations in the lake support phytoplankton growth, and during the summer when sunlight is abundant, cyanobacteria grow at fast rates.
- *Microcystis* cyanobacteria release polysaccharides outside of their cells in order to create large colonies and to regulate their environment. These "exopolysaccharides" or "EPSs" are produced in large quantities during phytoplankton blooms and change the chemistry of the surface of the lake.
- Invasive mussels get "sick" when feeding on the cyanobacteria and start producing polysaccharide-rich mucus of their own while recycling and ejecting the cyanobacteria EPSs, exacerbating the problem.
- Over time, these EPSs, which are not very soluble in the water and are stable in the environment, accumulate in the SML (see Foam Facts) and provide the right conditions for foam production. In fact, these types of polysaccharides are used in industries to stabilize foam and create emulsions.



Large foam accumulation on Canandaigua Lake, 2019.



Microcystis aeruginosa, round to oval cells embedded in a mucilaginous matrix made of polysaccharides (USGS 2015)

WHAT CAN WE DO TO PREVENT THIS?

Limit nutrient inputs into the lake. This can help control both cyanobacteria and mussels, which proliferate from abundant phosphorus and nitrogen.

The best ways to reduce nutrients are to:

- 1 Use less fertilizer
- 2 Control animal waste and wastewater discharge
- 3 Reduce erosion
- 4 Preserve and plant shrubs, trees, and groundcover along tributary streams.

IS THE FOAM SAFE?

- Some foam can concentrate pollutants at much higher levels than in the surrounding environment. This part of the study is ongoing. However, we have found microcystin toxins in the foam at higher concentrations than in nearby lake water, and in a few cases, higher than the NYS Department of Health's recreational limit.
- Our current study included testing for PCBs. Results will be forthcoming.

NEXT STEPS

Future research should assess the foam's potential to accumulate heavy metals and industrial toxins (including PFASs) in addition to further investigation of microcystin toxins in the foam.

- CLWA and GAR are developing a phase 2 plan to assess 4-season sampling and further testing for pollutants.
- CLWA needs your support to fund this expanded foam research and to support our efforts to improve water quality throughout our watershed.

Please contact CLWA for more information: info@canandaigualakeassoc.org

Foam Facts

- Foam can be naturally formed in lakes when the surface water is mixed by wind and waves and captures air bubbles. Foaming agents, the compounds that cause foam, are not very soluble in water and accumulate in the top 1mm of the lake in what is called the "surface micro-layer" or the "SML."
- Changes in a lake's water chemistry can result in more foam creation and more stable foam that may create noticeable bands in the middle of the lake or accumulate on beaches after it blows to shore.
- The quantity and stability of foam produced on Canandaigua Lake over the last several years hints at underlying changes to the lake's watershed or ecology.

Photo by Mary Zimmerman

Research conducted by aquatic scientists Richard W. Smith, PhD and Stella C. Woodard, PhD.

Sponsored by Canandaigua Lake Watershed Association.



CANANDAIGUA LAKE
WATERSHED ASSOCIATION





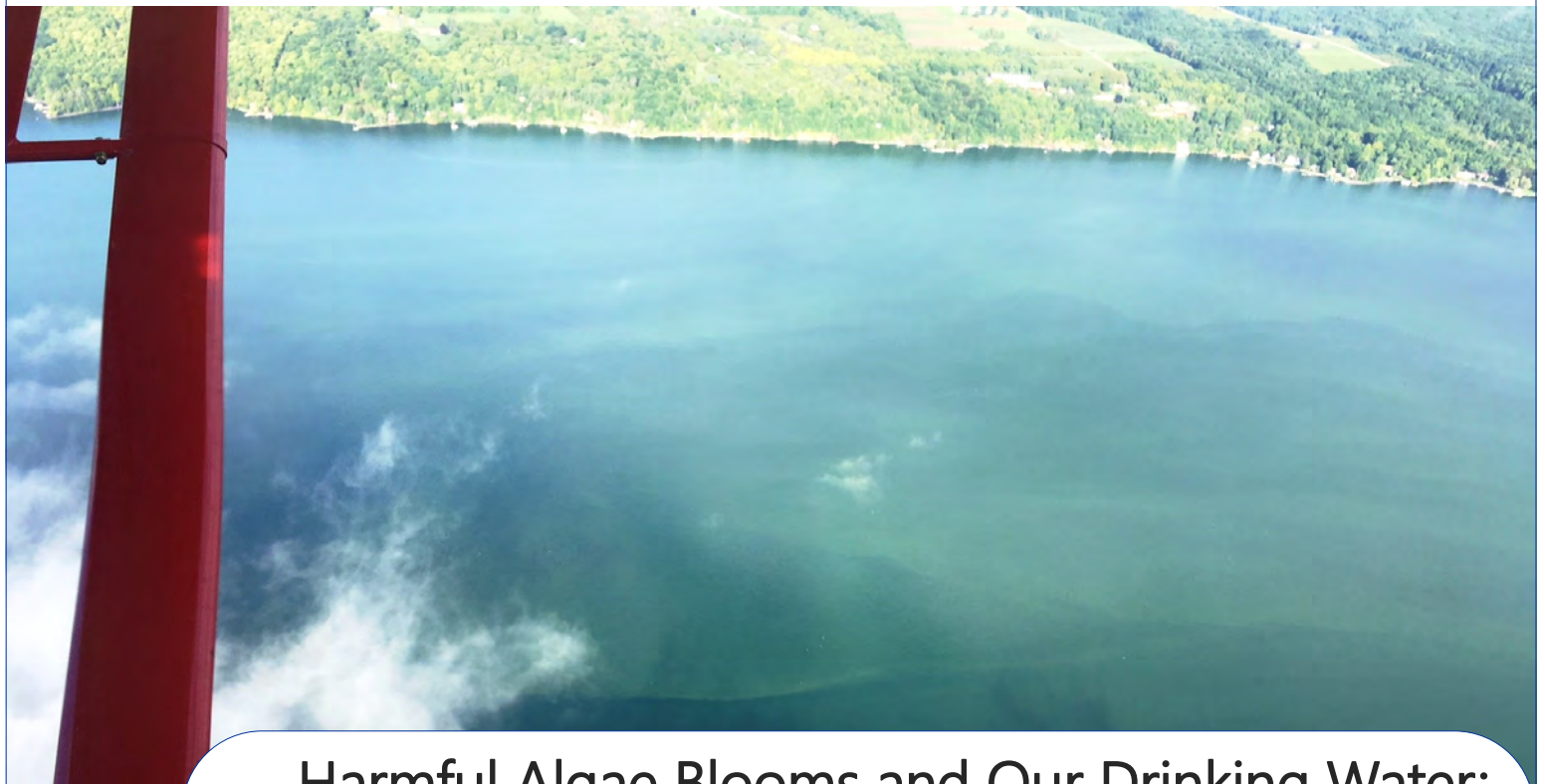
Non-Profit Org.
U.S. Postage
PAID
Canandaigua, NY
Permit No.40

CONTACT US:

PO Box 323
Canandaigua, NY 14424

585.394.5030
info@canandaigualakeassoc.org
www.canandaigualakeassoc.org

Find us on Facebook and Instagram!



Harmful Algae Blooms and Our Drinking Water: What you need to know

Do you draw water from the lake for drinking and household use?
Read more inside about water quality concerns you should be aware of.