

- **What are Cyanobacteria?**

Cyanobacteria are ancient aquatic bacteria that dominated the earth over 3.5 billion years ago. These organisms can produce their own food through photosynthesis and as a result produce most of the oxygen we breathe today. Cyanobacteria are found all over the earth including hot springs, deserts, and under ice.

- Cyanobacteria is also referred to as blue-green algae due to the presence of a pigment known as phycocyanin which evokes that color. Cyan means blue. However, they are not true algae since they lack a nucleus and membrane bound organelles or structures. Cyanobacteria can be present as a single-celled organism, threadlike filament, or colonial mass.

- **Why do they produce toxins?**

Toxins are biologically produced compounds that can impair the health of other organisms. Toxins produced by cyanobacteria are referred to as cyanotoxins. The role of these secondary metabolites is unknown.

- **What is a harmful algal bloom (HAB)?**

Cyanobacteria populations can explode under suitable environmental conditions such as sunlight, high nutrients (nitrogen and phosphorus), warm temperatures, and calm water. Cyanobacteria has a competitive advantage over true algae because they can fix atmospheric nitrogen, persist in low light conditions, and can move up and down in the water column to gain access to light and nutrients.

Nutrient pollution can come from a variety of sources, such as fossil fuels, agriculture and home fertilizer runoff, sewer and septic system runoff, urban sources, and industry. They are typically washed into waterways through stormwater runoff. ([EPA](#)).

Harmful algal blooms (HABs) are overgrowths of cyanobacteria in water. Some produce dangerous toxins in fresh or marine water but even nontoxic blooms hurt the environment and local economies. They can also create dead zones in water and raise treatment costs for drinking water. ([EPA](#))

- **Can I recreate during a bloom? What is New Jersey's response to a potential Harmful Algal Bloom?**

If a potential bloom is suspected, signs will be posted around the water body warning of a Suspected Harmful Algal Bloom and regulated swimming beaches will be closed. The NJDEP's Bureau of Freshwater and Biological Monitoring will collect water samples for algal cell counts and toxin screening.

Contact the Monmouth County Park System at Manasquan Reservoir at 732-919-0996 or visit: <https://www.monmouthcountyparks.com/Page.aspx?ID=2531> for the most up-to-date information regarding fishing and boating.

- **What are New Jersey's recreational guidelines for a Harmful Algal Bloom?**

According to the NJDEP, a Harmful Algal Bloom will be confirmed if the cyanobacteria cell counts are $\geq 20,000$ cells/ml and/or the cyanotoxins are above their designated threshold:

- Microcystins: ≥ 3 $\mu\text{g/L}$
- Cylindrospermopsin: ≥ 8 $\mu\text{g/L}$
- Anatoxin-a: ≥ 27 $\mu\text{g/L}$

These concentrations are intended to be protective during short-term exposures, such as multiple days of swimming during the swimming season, for the more sensitive sub-population of children. The values are probably highly conservative (i.e., protective) for the degree of exposure most likely to occur.

If a water body meets the conditions stated above, *Danger Harmful Algal Bloom* signs will be posted and regulated swimming beaches will remain closed.

Danger Harmful Algal Bloom signs will be posted at a waterbody with cyanobacteria cell counts equal to or over 20,000 cells/ml even if toxins are not detected. Cyanobacteria at this concentration may cause allergenic and/or irritant effects to a portion of an exposed population. These effects are caused by endotoxins (mainly the lipopolysaccharide component of the cyanobacterial cell wall) rather than cyanotoxins.

The *Danger HAB Present* signs will come down and regulated swimming beaches will reopen after two water samples have:

- Cyanobacterial Cell Counts $< 20,000$ cells/ml
- Microcystins (toxins) < 3 $\mu\text{g/L}$

- **What are the health effects of harmful algal blooms?**

Direct exposure to toxic algae through accidental swallowing or direct skin contact while swimming or engaging in watersport activities (jet skiing, kayaking, wind surfing and paddleboarding) or the inhalation of water droplets in water affected by a harmful algal bloom can cause serious health problems such as:

- Allergic-like reactions
- Skin rashes
- Respiratory problems
- Stomach illness
- Liver illness
- Kidney illness
- Neurological effects

This all depends upon the type of algae present in the water, the route of exposure, and amount of exposure to an individual. ([EPA](#))

NJ thresholds were developed for human exposure only. They do not apply to pets, livestock, or other animals, and they do not apply to fish consumption. Contact should be avoided by livestock and pets when evidence of HABs or their toxins are present.

- **What is NJWSA doing to manage the bloom?**

NJWSA will treat the reservoir using an algaecide if conditions are warranted. NJWSA monitors algae levels across several points in the reservoir on a regular basis. When a bloom is suspected, raw and finished water are tested for cyanotoxins. NJWSA has treated the Manasquan Reservoir with copper sulfate in the past in order to manage the algae population.

- **Will this affect my drinking water?**

The New Jersey Water Supply Authority (NJWSA) has a variety of safeguards in place to avoid or minimize the concentration of harmful algae in the raw source water that enters the water treatment process. The managers of the system will use the best source water or combination at a given time to deliver the best quality finished water to our customers. NJWSA has the ability to draw water from different water depths within the reservoir or to draw from the Manasquan River directly or to blend the water from any of these sources.

At this time, cyanotoxins in finished drinking water are not regulated by NJDEP or the USEPA. However, NJWSA does have the capability to qualitatively measure cyanotoxins in the source water and finish water. In the unlikely circumstance that a test result detected cyanotoxins in the treated finish water, NJWSA would send finish water samples to a certified lab for quantitative analysis.

Two processes within Manasquan Water Treatment Plant are generally shown to be effective for cyanotoxin removal: ozone and granular activated carbon (GAC). Based on the current research available on these technologies, it is very unlikely that cyanotoxins would be present in the finish water. NJWSA staff will monitor plant operations closely for any changes and will monitor for cyanotoxin levels. New Jersey American Water customers should contact Denise Free, Director of Communications, at Denise.Free@amwater.com for further information on their treatment and finish water testing.

- **What does a bloom look like?**

Cyanobacteria may look like blue or green spilled paint, parallel streaks, or pea soup. The cyanobacteria may collect on the surface of the water body, be suspended in the water column or persist as a mat on the bottom.

False alarms include green algae, duckweed, and watermeal.

Please visit NJDEP's website for photos and descriptions of cyanobacteria and its look alikes: <https://www.state.nj.us/dep/wms/images/HABSphotos.html>.

- **Is it ok for my dog to play in the water?**

If a HAB is confirmed, don't let your dog drink or swim in the water. According to the [EPA](#), if you ever see water that has a slimy sheen, has foam, scum or surface mats, you should keep your dog out of the water. Animals may be more susceptible to HAB toxins than humans. If you think your dog has come into contact with a harmful algal bloom, rinse your dog off immediately while wearing gloves to protect yourself and watch for

symptoms of sickness such as diarrhea or vomiting, weakness, drooling, difficulty breathing or convulsions. These can occur anywhere from 15 minutes to several days after coming into contact with the bloom.

- **Can I eat fish that I catch from a water body with a confirmed HAB?**

Fish caught in the affected waterbody should not be consumed. Algal blooms may cause off-flavor and objectionable odors in fish, and lead to fish kills.

- **When will the bloom be over?**

If the presence of a bloom is confirmed by the NJDEP, subsequent monitoring will continue until the risk level subsides, meaning cyanobacteria cell counts and toxin levels have returned to below health advisory threshold numbers. Bloom advisories are handled on a case-by-case basis, and a return to normal conditions depend on many factors including weather, the size and shape of the water body, and any utilized methods of management or treatment ([NJDEP](#)).

- **Where can I go online to find out where there are confirmed harmful algal blooms in New Jersey?**

Please visit the NJDEP's HAB Events Page at <https://www.state.nj.us/dep/wms/bfbm/cyanoHABevents.html>.

- **How do I find out when a confirmed Harmful Algal Bloom is resolved at my reservoir/lake?**

Please visit the NJDEP's HAB Events Page that will be updated under the Actions column as "Completed" and the date that the HAB posting was removed.

- **How do I report a potential harmful algal bloom?**

To report what might be a HAB in a lake, pond, river, or stream, call the DEP Hotline (1-877-WARNDEP (927-6337)) or download the free WARN NJDEP mobile app from iTunes, Google Play or Windows Phone. These are the *only means* of notifying DEP of a suspected HAB.

- **What can I do to prevent a harmful algal bloom?**

Nutrient pollution like nitrogen and phosphorus can feed cyanobacteria and cause their populations to bloom. You can try to reduce your inputs of nutrients into your local watershed by limiting fertilizer use, picking up dog waste, inspecting and maintaining your septic system annually. Additional recommendations include properly storing farm animal manure, avoid feeding wild geese that congregate around ponds and riverbanks, maintaining vegetated buffers around streams and ponds and installing green infrastructure like rain gardens to filter runoff.