

# Harmful Algal Bloom Testing

Cyanobacteria, also known as blue-green algae, are photosynthetic, organisms naturally found in water bodies. Blue-green algae can proliferate and 'bloom' very quickly in response to warm temperatures, sunlight and high levels of nutrients. Algal blooms can deplete the oxygen and block sunlight to other organisms, and some can produce powerful toxins that are capable of causing illness and even death to wildlife, livestock, pets and even people. In addition to producing toxins, these harmful algal blooms (HABs) can produce taste and odor issues in public water supplies. Recommended maximum levels of the most common of these algal toxins in drinking water and waters used for recreation are extremely low, making many of these compounds among the most deadly toxins known to man. These problems can be caused by several genera of algae, including *Microcystis*, *Planktothrix*, *Dolichospermum* (formerly *Anabaena*), and *Cylindrospermopsis*. EnviroScience is experienced in the analysis of algae/cyanobacteria populations and quantification of common algal toxins.

For more information on the effects of cyanobacteria on animals and available testing for ponds, lakes, and other recreation areas for pets, [see here](#).

EnviroScience offers the following in-house services:

## **Algae Toxin Testing via QPCR: NO GENE = NO TOXIN**

A variety of environmental factors may determine whether a harmful algal bloom (HAB) is producing toxin(s) at a given time and place, and a bloom that is not producing toxins one day may produce them the next. Genomic cyanobacteria screening via DNA-based Quantitative Polymerase Chain Reaction, or qPCR,

helps determine the potential for cyanotoxin production. It is possible to have a gene present without cyanotoxin production; however if cyanotoxins are being produced, the gene must be present. The presence or absence of toxin-producing genes in an algae bloom can help determine whether further testing for algal toxins via ELISA or another method is warranted.

**qPCR tests for the following toxin genes are available from EnviroScience:**

- *Microcystin/Nodularin*
- *Cylindrospermopsin*
- *Saxitoxin*

A test for Anatoxin is under development and is expected to be available soon.

In addition, qPCR can estimate the number of cyanobacteria present in a bloom using the 16S rRNA gene. Run concurrently with the toxin DNA tests, this test reports the percent of the cyanobacterial bloom that is capable of toxin production.

Contact one of our HAB specialists at 800-940-4025 for more information on these tests.

## **Algae Toxin Testing via ELISA Method**

ELISA tests (enzyme linked immunosorbent assay tests) are screening assays that detect specific groups of cyanotoxins. ELISAs have the ability to detect these toxins at extremely low levels in both surface water and drinking water. EnviroScience biologists provide rapid turnaround, with most samples being completed within 2 business days.

**(including many toxins on the U.S. EPA Candidate Contaminant List 3 (CCL 3))**

- *Microcystin-LR*
- *Anatoxin-a*
- *Saxitoxins*
- *Cylindrospermopsin*

## Algae Identification and Enumeration

- Qualitative or Quantitative Identification with Biovolumes
- Cyanobacteria Specific Identification and Enumeration
- [Photomicroscopy](#)
- [Periphyton & Phytoplankton Identification and Analysis](#)

## Algae and Algal Toxin Sampling

- Turn-key Sampling
- Sampling Kits – [\(Request a kit using contact form below\)](#)
- [Can provide sampling services, training, assistance, or materials as needed](#)

## Simple Sampling Kits



Simple DIY Monitoring Kit

- Sampling kits with intuitive instructions and prepaid

shipping

- Experts who create a customized monitoring plan based on test results and the client's need
- 24 hr. turnaround analysis available for cyanotoxin analysis
- Long-term solutions developed by an experienced team of limnologists and aquatic biologists

## Comprehensive Management

## Lake/Reservoir

- [Watershed Assessment](#)
- [Algae and Macrophyte Management](#)
- [Fishery Evaluations](#)
- [Diagnostic Lake Surveys](#)

Other analyses are available upon request.

## In Action



Harmful  
Algal Bloom



Blue Green  
Algae



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### Need help with your project?

Our experts are here to discuss your needs and how we can help you move your project forward. Fill out the form below for

more information on our services or to request a quote and we'll get back to you within 24 hours. If you need a response within an hour or less, please call us at 800-940-4025.

Your Name (required)

Your Email (required)

Subject

Your Message