

How to Collect Cyanobacteria (Blue-Green Algae) Water Samples

Only designated priority beaches may submit cyanobacteria samples. Samples submitted by non-designated beaches will be rejected. Contact your local Public Health Inspector if you have questions or concerns about priority beaches or recreational water quality.

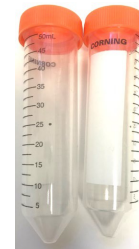
This document is designed to help beach operators collect cyanobacteria (blue-green algae) water samples at public beaches. The two types of samples that are submitted for cyanobacteria testing are:

1. Microcystin – a type of toxin (harmful substance) that some types of cyanobacteria produce; and
2. Cell Count and Speciation – a count of how many cyanobacteria cells are in one milliliter of water and identification of the types of cyanobacteria present.

Materials supplied by AHS (per sampling event)	
One 125 mL Alberta Centre for Toxicology (ACFT) plastic bottle with a white cap – for microcystin sampling	
Two 50 mL conical tubes with orange caps – for cell count and speciation sampling	
Two plastic resealable sample bags	
ACFT Laboratory Requisition for Microcystins Analysis form	
Lugol's solution and Safety Data Sheet	
Plastic wine thief	
Materials supplied by sampler (per sampling event)	
Large pail	Plastic or metal probe thermometer
Ice packs	Aluminum foil
Disposable gloves	Cooler
Hip waders	Life jacket/Personal flotation device
Preprinted beach name/access number labels (optional)	Camera or phone with camera

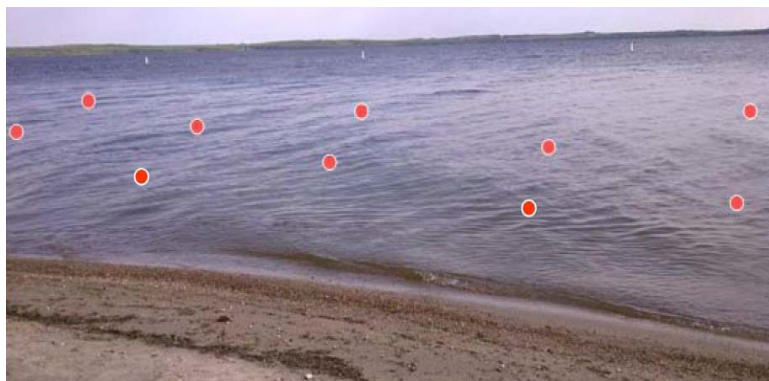


ACFT microcystin sample bottle (above). Conical tubes for cell count and speciation (below).



Important Note: If a cyanobacterial bloom is present, avoid direct contact with the water as some types of cyanobacteria may cause skin irritation. The use of hip waders and disposable gloves will help prevent contact with a bloom. A cyanobacteria reference guide, which includes pictures, can be found in the Frequently Asked Questions document located at www.ahs.ca/bqa.

How to Collect Cyanobacteria (Blue-Green Algae) Water Samples | 2



Composite Sampling Method:

Water samples from 10 different locations are combined, thoroughly mixed, and treated as a single sample. This type of sample is used because cyanobacterial blooms are not evenly spread through the water. In the picture (left), 10 sample sites are used to make the composite for the cyanobacteria sample.

Sample collection site locations. Photo courtesy of Cheryl Galbraith, EPH

Collection Procedure:

At the beach where the sample is to be collected, rinse the pail and wine thief thoroughly with lake water.

1. Collect water samples from 10 different locations using the wine thief and deposit each sample into the pail. Sample locations should be consistent week to week and include 5 locations that are knee deep and 5 locations that are mid-thigh deep.
2. Mix the contents by swishing the pail.
3. Using the contents of the pail:
 - a. Fill the ACFT bottle $\frac{3}{4}$ full (approximately 100 mL).
 - b. Fill the 2 conical tubes (with orange or blue caps) to the 49 mL mark. Add 1-2 mL of Lugol's solution.
4. Ensure all caps are "finger tight". Do not overtighten caps as this can cause cracking.
5. Take photographs of the sample site (both beach and water). These may be requested by AHS for assessment of the results.

Submitting the Samples:

1. **Label all three bottles** with the waterbody name, beach name, access number, and collection date. Pre-printed labels are recommended.
2. Stick a sample ID label (attached to the requisition form) onto each bottle and each cap, and in the top right corner of the requisition form. Be sure to only use current year ID labels (e.g. M21**** for 2021).
3. Wrap the 125 mL ACFT microcystin bottle in aluminum foil.
4. Complete the requisition form in full.
5. Place the ACFT microcystin bottle in one plastic bag and put the completed requisition form in the front pouch of this bag. Place the two conical tubes with the sample ID labels in another plastic bag without a requisition form.
6. Store the bottles in a cooler with ice packs.
7. Transport the samples to an Environmental Public Health office. Consult with your local Public Health Inspector regarding accepted days and times for sample drop-off.

How to Collect Cyanobacteria (Blue-Green Algae) Water Samples | 3


Notes:

- **If a cyanobacterial bloom is suspected to be present in the water**, consult your local public health inspector. If requested, use a wide mouth bottle to collect some of the surface scum. Follow steps 4-6 of the collection procedures using the surface scum water. Submit these samples following the procedures listed above. Note that the sample type must be indicated as “**grab**” on the requisition form instead of “composite”. Grab samples do not replace routine weekly composite sampling activities. Please ensure routine composite sampling is also completed.
- Store the Lugol’s solution wrapped in aluminum foil (to protect from sunlight) and in the refrigerator when not in use. This is a non-toxic substance used to preserve the sample. The Safety Data Sheet (SDS) for the solution should have been supplied with the Lugol’s solution. Consult your local health inspector if you did not receive the SDS.
- Labels can be made to assist with the sampling process.
 - Sample bottle labels: Include the waterbody name, beach name, beach access number, and collection date. The date will need to be filled in by the collector.
 - Requisition form labels: Include the waterbody name, beach name, and the beach access number. They also may include the collector’s name and phone number.
- Ensure requisition forms are complete. Incomplete requisition forms may result in samples not being tested by the laboratory or a lack of information to properly interpret the sample result.
- Lab results will be sent to Alberta Health Services for interpretation and distribution to beach operators.

How to Collect Cyanobacteria (Blue-green Algae) Water Samples | 4

F-BA15018-170523

**Laboratory Requisition For
Microcystins Analysis**



ACFT
Alberta Centre For Toxicology

Alberta Centre for Toxicology
University of Calgary
HMRB-B19, 3830 Hospital Drive NW
Calgary, Alberta T2N 4N1

ID LABEL

Sample analysis requested for this sampling event (check all that apply):

Microcystins
 Cyanobacterial cell count
 Cyanobacterial genes (qPCR)
 Fecal (thermotolerant) coliforms

Waterbody name: Stormy Lake Beach name: Campground Beach AHS Beach Access #: 9621522 Collector name: John Smith Phone number: 780-791-6078	Collection date: June 01, 2020 Collection time: 13:05 Nearest town: Clearwater, AB GPS (dec. degrees): 56.99128, -112.845422 Email: John.Smith@ahs.ca
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Additional Information (please select ONE box only from each category)

Source: <input checked="" type="checkbox"/> Lake <input type="checkbox"/> Reservoir <input type="checkbox"/> River <input type="checkbox"/> Pond <input type="checkbox"/> Other
Type: <input checked="" type="checkbox"/> Composite <input type="checkbox"/> Grab Treatment: <input checked="" type="checkbox"/> Raw <input type="checkbox"/> Public treated <input type="checkbox"/> Private treated

Visual Inspection of Water
(please select ONE box only from each category)

Turbidity <input type="checkbox"/> Clear <input checked="" type="checkbox"/> Slight <input type="checkbox"/> Moderate <input type="checkbox"/> Total	Colour <input type="checkbox"/> Colourless <input checked="" type="checkbox"/> Brown <input type="checkbox"/> Green <input type="checkbox"/> Other	Evidence of cyanobacterial bloom <input checked="" type="checkbox"/> No evidence <input type="checkbox"/> Particles in water <input type="checkbox"/> Streaks on surface <input type="checkbox"/> Scums on surface
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Other Observations
(please select ONE box only from each category)

Wind Direction <input type="checkbox"/> No wind <input checked="" type="checkbox"/> N <input type="checkbox"/> NE <input type="checkbox"/> E <input type="checkbox"/> SE <input type="checkbox"/> S <input type="checkbox"/> SW <input type="checkbox"/> W <input type="checkbox"/> NW	24 Hour Rainfall <input type="checkbox"/> Yes Amount: _____ mm <input checked="" type="checkbox"/> No
Water temperature <div style="text-align: center;">18 °C</div>	Sampling depth <div style="text-align: center;">0.5 m</div>

Additional comments

Indicate which sample types are being requested. Routine testing includes "microcystins" and "cyanobacterial cell count"

Place pre-printed label here or fill out by hand

Date & time must be filled out

Indicate the water body source and mark "raw" for treatment

Indicate if a composite or grab sample was collected (usually composite)

Record visual observations at the time of sampling for turbidity (how clear or murky the water is), colour, and visual evidence of a cyanobacterial bloom

Record the direction from which the wind is blowing

24 Hour Rainfall - current and historical weather station data available from:
<http://agriculture.alberta.ca/acis/alberta-weather-data-viewer.jsp>
 Water Temperature – as measured with a plastic or metal probe thermometer
 Sampling Depth – how far under the water surface the sample was collected

For more information, please contact your nearest Environmental Public Health office.

Edmonton Main Office
Calgary Main Office
Lethbridge Main Office

780-735-1800 Grande Prairie Main Office
403-943-2288 Red Deer Main Office
403-388-6689 www.ahs.ca/eph

780-513-7517
403-356-6366

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