

# 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.**

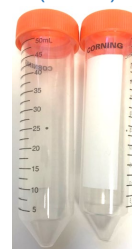
This document is meant to help beach operators collect cyanobacteria (commonly called blue-green algae) samples at public beaches. The two types of samples that are submitted for cyanobacteria testing are:

1. Microcystins – 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 millilitre 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	
Alberta Centre for Toxicology requisition form titled “Laboratory Requisition for Microcystins Analysis”	
Lugol’s solution and Safety Data Sheet	
Materials supplied by sampler (each sampling event)	
Large pail	Plastic or metal probe thermometer
Plastic wine thief	Aluminum foil
Ice packs	Cooler
Shoulder length gloves (vet use)	Life jacket/Personal flotation device
Camera or phone with camera	
Preprinted Beach name/Access number labels (optional)	

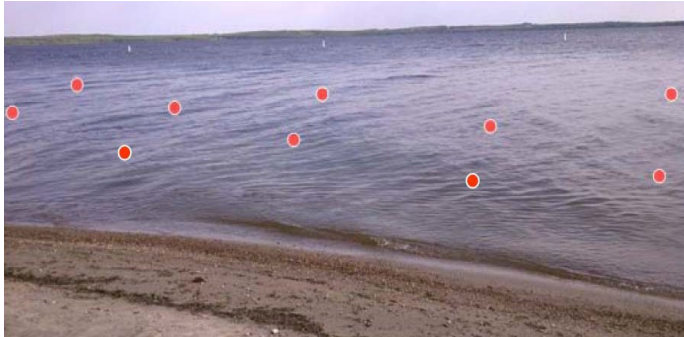


*ACFT microcystin sample bottle (above). Conical tubes for cell count and speciation (below).*



**Important Note:** If a bloom is present, be sure to prevent direct contact with the water as some types of cyanobacteria may cause skin irritation. The use of hip waders and arm length plastic gloves (available from veterinary supply stores) will help prevent contact with the bloom. A cyanobacteria reference guide which includes pictures can be found in the Frequently Asked Questions document located on [www.ahs.ca/bga](http://www.ahs.ca/bga).

## 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:

1. At the beach where the sample is to be collected, rinse the pail and wine thief thoroughly with lake water.
2. 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.
3. Mix the contents by swishing the pail well.
4. Using the contents of the pail:
  - Fill the ACFT bottle  $\frac{3}{4}$  full (approximately 100 mL).
  - Fill the 2 conical tubes (with blue caps) to the 49mL mark. Add 1-2 mL of Lugol's solution.
5. Ensure all caps are "finger tight". Do not overtighten caps as this can cause cracking.
6. Take photographs of the sample site (both beach and water). These may be requested by AHS for assessment of the results.

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

### Submitting the Samples:

1. Label all three bottles with the Lake Name, beach name, access number, and collection date. Pre-printed labels are recommended.
2. Stick a sample ID label (M\*\*\*\*\*; attached to the requisition form) onto each bottle and each cap, and in the top right corner of the requisition form.
3. Wrap the 125 mL ACFT microcystin bottle in tin foil.
4. Complete the requisition form in full.
5. Place the ACFT microcystin bottle in one plastic bag and put the completed requisition 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 the 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.

### Notes:

- **If a cyanobacteria 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 the sample collection and submitting the sample procedures above using the water from the surface scum. 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 be supplied with the sample bottles. 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 water body name, beach name, beach access number, and date. The date will need to be filled in by the collector.
  - Requisition form labels: Include the water body name, the beach name and the beach access number. They also may include the collector’s name and phone number.
- Incomplete requisition forms lead to either 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

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

F-BA15018-170523

## Laboratory Requisition For Microcystins Analysis



Alberta Centre for Toxicology  
University of Calgary  
HMRB-B19, 3330 Hospital Drive NW  
Calgary, Alberta T2N 4N1



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

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

Place pre-printed label here or fill out by hand

Waterbody name: <b>Stormy Lake</b>	Collection date: <b>June 01, 2020</b>
Beach name: <b>Campground Beach</b>	Collection time: <b>13:05</b>
AHS Beach Access #: <b>9621522</b>	Nearest town: <b>Clearwater, AB</b>
Collector name: <b>John Smith</b>	GPS (dec. degrees): <b>56.99128, -112.845422</b>
Phone number: <b>780-791-6078</b>	Email: <b>John.Smith@ahs.ca</b>

Date & time must be filled out

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

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

Visual Inspection of Water (please select ONE box only from each category)			Other Observations (please select ONE box only from each category)	
<b>Turbidity</b> <input type="checkbox"/> Clear <input checked="" type="checkbox"/> Slight <input type="checkbox"/> Moderate <input type="checkbox"/> Total	<b>Colour</b> <input type="checkbox"/> Colourless <input checked="" type="checkbox"/> Brown <input type="checkbox"/> Green <input type="checkbox"/> Other	<b>Evidence of cyanobacterial bloom</b> <input checked="" type="checkbox"/> No evidence <input type="checkbox"/> Particles in water <input type="checkbox"/> Streaks on surface <input type="checkbox"/> Scums on surface	<b>Wind Direction</b> <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	<b>24 Hour Rainfall</b> <input type="checkbox"/> Yes Amount: _____ mm <input checked="" type="checkbox"/> No Water temperature: <b>18</b> °C    Sampling depth: <b>0.5</b> m
Additional comments				

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

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

Record the direction from which the wind is blowing from

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

©2019 Alberta Health Services, Safe Healthy Environments

PUB-0434-201906



This work is licensed under a [Creative Commons Attribution-Non-commercial-Share Alike 4.0 International license](https://creativecommons.org/licenses/by-nc-sa/4.0/). You are free to copy, distribute and adapt the work for non-commercial purposes, as long as you attribute the work to Alberta Health Services and abide by the other license terms. If you alter, transform, or build upon this work, you may distribute the resulting work only under the same, similar, or compatible license. The license does not apply to content for which the Alberta Health Services is not the copyright owner.

This material is intended for general information only and is provided on an "as is," "where is" basis. Although reasonable efforts were made to confirm the accuracy of the information, Alberta Health Services does not make any representation or warranty, express, implied or statutory, as to the accuracy, reliability, completeness, applicability or fitness for a particular purpose of such information.