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.

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

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/bga.

For more information, visit Environmental Public Health

ahs.ca/eph
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 ¾ 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.
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.
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1. Record the direction from which the wind is blowing.
2. 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.
3. Place pre-printed label here or fill out by hand.
4. Date & time must be filled out.
5. Indicate the water body source and mark “raw” for treatment.
6. Indicate which sample types are being requested. Routine testing includes “microcystins” and “cyanobacterial cell count.”
7. Indicate if a composite or grab sample was collected (usually composite).

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

Edmonton Main Office 780-735-1800 Grande Prairie Main Office 780-513-7517
Calgary Main Office 403-943-2288 Red Deer Main Office 403-356-6366
Lethbridge Main Office 403-388-6689 www.ahs.ca/eph

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