

Alberta Health Services 2013 Recreational Beach Water Program

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Recreational Water



AHS Role: Public Health Protection



PUBLIC NOTICE



**DUE TO THE PRESENCE OF HARMFUL BACTERIA,
SWIMMING IS NOT RECOMMENDED IN THIS AREA
SWIM AT YOUR OWN RISK**

Results of bacteriological testing of this beach area have shown increased levels of fecal coliform bacteria in the water, which can cause serious illness. Capital Health will continue to monitor the water quality.

For further questions or concerns, please contact:
Alberta Health Services, Environmental Public Health at (780) 342-0122

Health Concerns

Physical hazards

- Drowning, neck injuries, debris on the beach & in the water

Biological hazards

- Pathogens (*E. coli*, Shigella)
- Protozoa (Giardia, Schistosomes)
- Viruses (Adenovirus, Norovirus)
- **Algal blooms (Biomass, Toxins)**

Chemical hazards

- Chemicals (accidental spills)



What is Blue - Green Algae?

- Also known as **Cyanobacteria**
- Photosynthetic bacteria, possessing properties of algae
- Some species are toxigenic: (Cyanotoxins)
 - Hepatotoxins
 - Vomiting, diarrhea, fever, cramps
 - Possible liver damage
 - Neurotoxins
 - Paralysis, seizure, death
 - Dermatotoxins
 - Eye, ear and throat irritation
 - Rashes
 - Skin Lesions
- In the right environmental conditions, nuisance algal blooms can form:
 - Diffuse Bloom
 - Surface Bloom



Blue – Green Algae Blooms

- Many of Alberta's lakes are eutrophic or hyper-eutrophic
- Very small “buffer” zone
- Bloom formation is a function of:
 - Water temperature
 - Wind speed
 - nutrients: [P] and [N]
 - Lake depth
 - Sunlight
- Anthropogenic Sources of Phosphorus:
 - Detergents
 - Fertilizers
 - Human Sewage
 - Cleaning Products
 - To name a few



AHS Cyanobacteria Monitoring Program



2013 Alberta Lakes (38 Lakes, 58 Beaches)

NORTH ZONE

- Moose Lake
- Baptiste Lake
- Calling Lake
- Cross Lake
- Lac La Biche
- Lac la Nonne
- Lac St. Anne
- Skeleton Lake
- Thunder Lake
- Gregoire Lake
- Lake Isle

SOUTH ZONE

- Park Lake
- Milk River Ridge
- Rattlesnake/Sauder Reservoir
- 40 Mile Reservoir

CENTRAL ZONE

- Gull Lake
- Sylvan Lake
- Pine Lake
- Pigeon

CALGARY ZONE

- Eagle Lake
- Chestermere Lake
- McGregor Lake
- Traverse Reservoir
- Johnson Lake
- Cascade Ponds
- Two Jack Lake
- Quarry Lake
- Tim Horton's Childrens's Ranch
- Ghost Lake
- Calderon Acres Camp

EDMONTON ZONE

- Lake Isle
- Wabamun Lake
- Pigeon Lake
- Wizard Lake
- Jackfish Lake
- Hasse Lake
- Mink Lake
- Hubbles Lake
- Manmade Lake

Regulations and Guidelines for Recreational Water (BGA)

Guidelines for Canadian Recreational Water Quality

Total Cyanobacteria: **100 000 cells/mL**
OR
Total microcystins: **20 µg/L** (expressed as microcystin- LR)

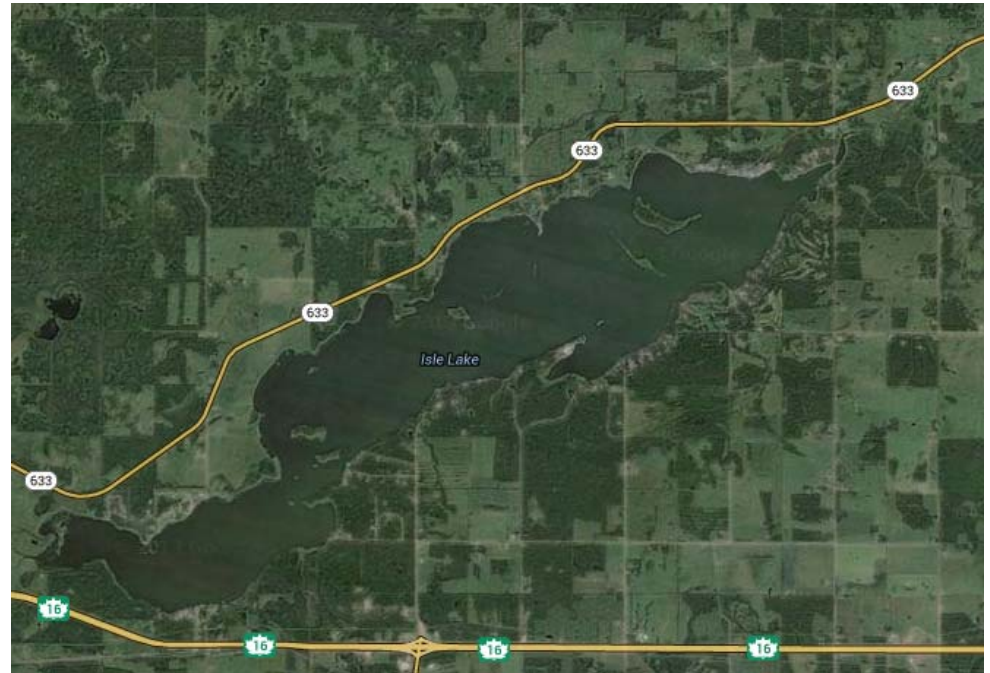
Exceedances of these values or development of a bloom indicates the potential for exposure to cyanobacterial cells and/or their toxins in amounts that are harmful to human health.

Laboratory analysis

Lab	Test	Acknowledgements
ACFT	Microcystin concentration	Dr. David Kinniburgh Dr. Vichaya Charoensuk
U of A	Cyanobacterial cell count and speciation	Dr. Rolf Vinebrooke Dr. Mark Graham Stephanie Pileci
ProvLab	Gene analysis	Dr. Weiping Zhang Dr. Judy Qiu Dr. Lilly Pang

Isle Lake

- Close to Edmonton
- 3 sampling sites
- Long history of BGA Blooms
- Hyper-eutrophic
- Many communities on shoreline



Isle Lake

- Local inspector, “water was green as soon as the ice started to melt.”
- Advisory issued on June 27, 2013



Picture taken on July 8, 2013 at Camp Koinonia

Isle Lake

Collection Date	Microcystin equivalent by PPI (ug/L)	Cell Count (cells/mL)
21-May-13	<0.05	0
27-May-13	0.10	75057.30
3-Jun-13	0.19	309269.17
10-Jun-13	0.23	23057601.81
17-Jun-13	0.38	1100585.72
24-Jun-13	3.56	
6-Aug-13		1443145.30
12-Aug-13		3726742.94
19-Aug-13		337063.40

Eagle Lake

- Considered to be hyper - eutrophic
- Close proximity to Calgary
- Popular fishing lake
- Advisory issued on July 31, 2013



Picture taken on August 7, 2013, main beach

Eagle Lake

Collection Date	Microcystin equivalent by PPI (ug/L)	Cell Count (cells/mL)
22-May-13	0.31	551493.34
29-May-13	0.27	0
5-Jun-13	0.26	0
12-Jun-13	0.37	
19-Jun-13	0.25	
3-Jul-13	1.06	
16-Jul-13	24.86	
24-Jul-13	3.90	146006.23
31-Jul-13	3.75	
6-Aug-13	3.45	432685.23
13-Aug-13	1.82	
21-Aug-13	2.28	347166.30

Cochrane Lake

- Secondary Recreation
- Small lake
- Advisory issued on August 2, 2013



Picture taken on July 31, 2013, private property

Cochrane Lake

Collection Date	Microcystin equivalent by PPI (ug/L)	Cell Count (cells/mL)
10-Jul-13	0.69	229982.91
24-Jul-13	64.23	
31-Jul-13	37.92	
7-Aug-13	25.58	904240.88
14-Aug-13	12.67	422447.76
21-Aug-13	10.75	600394.70

EPH Response to Water Results and Algae Blooms

- Following the issuing of a health advisory in consultation with the Medical Officer of Health, the information is posted on the AHS website under Active Health Advisory.

<http://www.albertahealthservices.ca/1926.asp>

- The beaches are posted with signage on site to inform the public of the health hazards. This can be done by AHS EHOs or the beach operator.



The screenshot shows the Alberta Health Services website with the 'Active Health Advisories' section highlighted. The page includes a search bar, navigation tabs, and a list of advisories categorized by region (North Zone, Edmonton Zone, Central Zone, Calgary Zone). A map of Alberta is visible on the right side of the page.

Active Health Advisories

- Inactive Health Advisories
- Blue-green algae advisory lifted for Eagle Lake (Calgary Zone)
- Back to News & Events

Information updates for Media

Health Advisories

RSS Feeds

- Subscribe to Health Advisories (RSS)
- Information about RSS Feeds

Health advisories for physicians, healthcare workers and the public.

Provincial

- Inactive Provincial Health Advisories

North Zone

- Blue-green algae advisories lifted for 14 North Zone lakes (October 10, 2012)
- Boil water advisory lifted for Village of Rarofo (October 5, 2012)
- Precautionary fine smoke advisory lifted for North Zone (September 27, 2012)
- Contaminated water advisory lifted for Franchère Bay at Moose Lake. Blue-Green Algae advisory still in effect (August 22, 2012)
- Air Quality Advisory lifted: North Zone (July 23, 2012)
- Practice sun and heat safety in summer weather (July 9, 2012)

Inactive North Zone Health Advisories

Edmonton Zone

- Precautionary fine smoke advisory lifted for Edmonton Zone (October 1, 2012)
- Blue-green algae advisory issued for Pigeon Lake (July 27, 2012)
- Blue-green algae advisory issued for Lac Ste. Anne (July 24, 2012)
- Contaminated water advisory issued for Hasee Lake (Parkland County) (July 18, 2012)
- Air Quality Advisory lifted: Edmonton and area only (July 16, 2012)
- Blue-green algae advisory issued for Lake Isle (July 10, 2012)
- Practice sun and heat safety in summer weather (July 9, 2012)

Inactive Edmonton Zone Health Advisories

Central Zone

- Blue-green algae advisories lifted for Pine Lake and Pigeon Lake (October 10, 2012)
- Practice sun and heat safety in summer weather (July 9, 2012)
- Hartbeeving confirmed in Central Alberta: important precautions issued (July 5, 2012)

Inactive Central Zone Health Advisories

Calgary Zone

- Blue-green algae advisory lifted for Eagle Lake (October 10, 2012)

Inactive Calgary Zone Health Advisories

Zone Map

View larger zone map (pdf)

Federal Notices

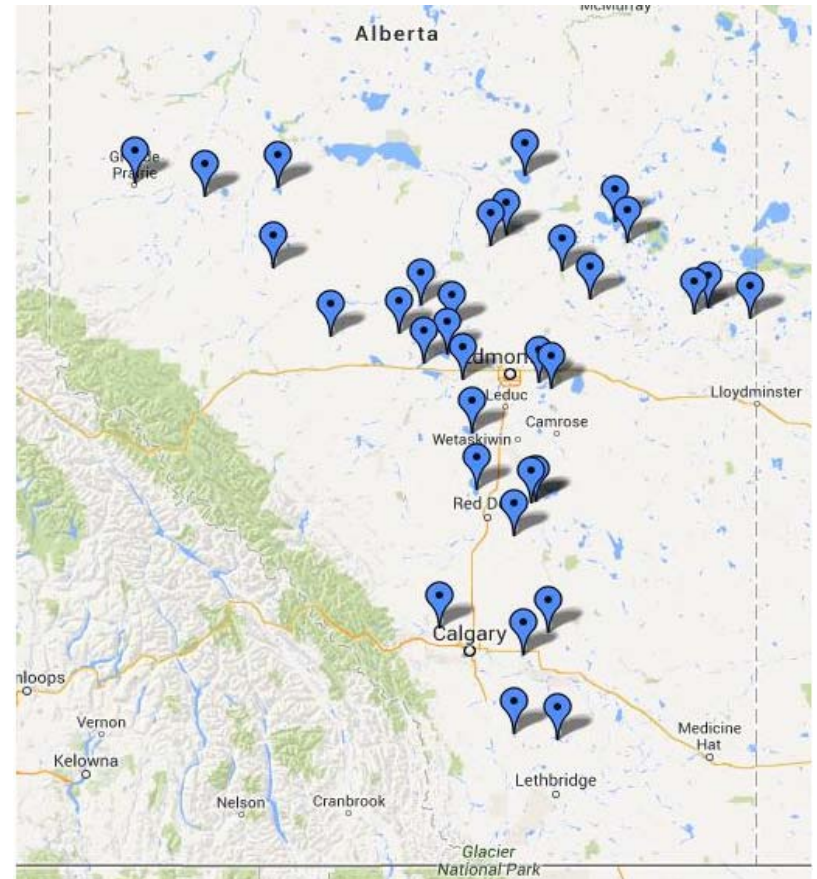
- Canadian Food Inspection Agency: Food Recalls & Allergy Alerts
- Public Health Agency of Canada: Food Safety News
- Public Health Agency of Canada: Travel Health Notices
- Health Canada: Consumer Product Advisories, Warnings & Recalls

Resources

- Flood Information

2013 Blue Green Algae Advisories

- 36 Public Health Advisories issued to date
- Most advisories are in the North zone (21)
- Calgary area saw an increased number of advisories (floods?)



Map courtesy of Chris Teichreb, ESRD

Lessons Learned and Future Work

- Cyanobacterial cell counts can be used to help predict the formation of a bloom
- Only 2 lakes had microcystin-LR guideline exceedances (limitations to sampling program)
- EHO feedback – difficult to visually identify bloom: Future work on field manual with ACMPPH and further training of students and EHOs

Acknowledgements

- Alberta Cyanobacteria Monitoring Program for Public Health (ACMPPH)
- Alberta Centre for Toxicology (ACFT) (Dr. David Kinniburgh and Vichaya Charoensuk)
- Drs. Rolf Vinebrooke and Mark Graham, U of A
- Stephanie Piliéci, U of A
- ProvLab
- AESRD Limnologists
- AHS – EPH Practicum Students and EHOs for sample collection

Thank you!

Questions, Comments, Concerns

**Contact information:
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