## Report: Alberta Health Services 2013 Recreational Water Monitoring Program Summary

Each summer Alberta Health Services (AHS) conducts routine water sampling of recreational waters to identify water quality problems and manage any associated health risks. Samples are tested for feacal coliforms, cyanobacterial cell counts and microcystin concentrations.

In 2013, AHS monitored 37 lakes, which included 55 public beaches, across the province. In total, over 1500 water samples were collected and submitted to the Provincial Laboratory for faecal coliform testing. 600 composite samples were submitted to the Alberta Centre for Toxicology (ACFT) for microcystin testing and another 600 composite samples were submitted to a University of Alberta research lab for determination of cyanobacterial cell counts.

The standards used to assess the faecal coliform samples come from the *Nuisance and General Sanitation Regulation* pursuant to the *Public Health Act*, which outline the following standards:

- The geometric mean of < 200 faecal coliforms/100mL of water (need a minimum of 5 samples taken over a thirty day period).
- No 2 consecutive samples having > 400 faecal coliforms/100mL of water.

To assess the water quality for cyanobacteria, AHS is using Health Canada's *Guidelines for Canadian Recreational Water Quality* (2012), which outlines the following guidelines:

- Total cyanobacteria: 100 000 cells/mL.
- Total microcystins: 20 µg/L (expressed as microcystin-LR).

### 2013 Recreational Water Sample Results:

Based on the faecal coliform testing, there were no advisories issued for unacceptable bacteriological water quality.

For the cyanobacteria monitoring program, AHS issued 35 blue-green algae (BGA) health advisories across the province. These advisories were based on visual inspections and/or total cyanobacterial cell count exceedances and/or microcystin-LR concentrations. The earliest advisory was issued for Lake Isle on June 27 and the latest was issued for Vincent Lake on September 9. All advisories were rescinded in the months of October and November.

A summary of the lakes that went under advisory, along with the maximum cell count and microcystin concentrations are provided in the table below:

Table 1: Summary of AHS issued blue-green algae advisories in 2013

| Lake | Maximum cell count (cells/mL)** | Maximum microcystin concentration (µg/L) |
|---|---|---|
| **Alix Lake** | Visual confirmation, no lab data | |
| **Baptiste Lake*** | **4824127** | **2.82** |
| **Bear Creek and Reservoir** | Visual confirmation, no lab data | |
| **Beaver Lake** | Visual confirmation, no lab data | |
| **Calling Lake*** | **1165047** | **0.14** |
| **Cochrane Lake** | **1047634** | **64.23** |
| **Cross Lake*** | **1045246** | **0.42** |

| Lake | Maximum cell count (cells/mL)** | Maximum microcystin concentration (µg/L) |
|---|---|---|
| **Eagle Lake*** | **2621825** | **24.86** |
| **Gull Lake*** | **2368058** | **1.29** |
| **Half Moon Lake** | Visual confirmation, no lab data | |
| **Hasse Lake*** | **2515843** | **0.16** |
| **Hastings Lake** | **227383** | **8.45** |
| **Haunted Lake** | **343156** | **34.56** |
| **Iosegun Lake** | Visual confirmation, no lab data | |
| **Kehewin Lake** | Visual confirmation, no lab data | |
| **Lac La Biche*** | **199584** | **0.85** |
| **Lac La Nonne*** | **3494148** | **51.58** |
| **Lac St. Anne*** | **319336** | **0.70** |
| **Lake Isle*** | **23057602** | **28.87** |
| **Long Lake** | **74913** | **0.11** |
| **Mons Lake** | 514076 | 0.13 |
| **Moonshine Lake** | Visual confirmation, no lab data | |
| **Muriel Lake** | n.d. | 20.90 |
| **Paddle River Dam** | Visual confirmation, no lab data | |
| **Pigeon Lake*** | 1137713 | 3.45 |
| **Pine Lake*** | 2311739 | 6.87 |
| **Severn Lake** | Visual confirmation, no lab data | |
| **Shiningbank Lake** | Visual confirmation, no lab data | |
| **Snipe Lake** | Visual confirmation, no lab data | |
| **Swan Lake** | Visual confirmation, no lab data | |
| **Thunder Lake** | 7147656 | 14.68 |
| **Travers Reservoir*** | 2039981 | 21.77 |
| **Twin Valley Reservoir** | Visual confirmation, no lab data | |
| **Vincent Lake** | Visual confirmation, no lab data | |

* indicates a lake that is routinely monitored by AHS

** the cell count data is based on results received up to March 6, 2014.

**Posting of Signage**

Posting blue-green algae health advisory signs:

- Advisory signs are posted at beach and other public locations around a lake when an advisory is issued.
- The advisory signs are removed when the advisory is rescinded.

Posting blue-green algae information signs:

- Information signs are posted and removed at the same time as advisory signs.
- For lakes with at least two (2) consecutive years of AHS issued BGA health advisories, public BGA information signs will be posted permanently at beach locations and other public locations. After the 2013 sampling season, the following 12 lakes received permanent information signs:

| Lake |
|---|
| Baptiste Lake |
| Calling Lake |
| Eagle Lake |
| Lake Isle |

| |
|---|
| Moonshine Lake |
| Pigeon Lake |
| Pine Lake |
| Kehewin Lake |
| Lac la Nonne |
| Lac St. Anne |
| Thunder Lake |
| Vincent Lake |

The purpose of the information signs is to help the public identify evidence of cyanobacterial blooms and take the necessary precautions. If an individual sees evidence of a cyanobacteria bloom, they are advised to call the nearest Environmental Public Health Office to report it.

**Fish Consumption Messaging**

Based on fish sampling done in 2012 and 2013 by Alberta Environment and Sustainable Resource Development, the following messaging remains in effect:

- People can safely consume fish fillets from lakes affected by blue-green algae. However, it is known that fish may store toxins in their liver; therefore people may wish to limit their consumption of whole fish and trimmings.
- Animals should not consume whole fish or trimmings from affected lakes.
- Testing of livers from fish collected from Alberta lakes will continue and results may inform updates to this fish consumption advisory in the future.

**2014 Recreational Water Monitoring Program**

The 2014 recreational water monitoring program is expected to run similarly to 2013. Sampling will begin in late May or early June and run through to September. For lakes that are routinely sampled for faecal coliforms, weekly monitoring information can be found at the AHS Popular Beaches Website. All advisories pertaining to recreational water quality can be found by visiting the Health Advisories Website.

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*Article Submitted by: Jessica Popadynetz, Program Coordinator, Alberta Health Services*