



Blue-Green Algae Monitoring 2016 Report

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Background

Cyanobacteria or 'blue-green algae' are microscopic, plant-like bacteria that occur naturally in ponds, rivers, lakes and streams throughout the world. Individual organisms are not normally visible in the water, but populations can increase rapidly when conditions are favorable, congregating together in large masses or 'blooms'.

Blooms most commonly occur in late summer or early fall, when surface waters are warmest, but they can also occur at other times during the year. In addition to water temperature, a key factor contributing to the growth of blue-green algae is the amount of available nutrients such as phosphorus and nitrogen in the water.

Many varieties of blue-green algae can produce toxins that are potentially harmful to humans and animals. The most common blue-green algae toxins encountered and monitored in Canadian waters are microcystins. Health Canada has established guidelines for the cyanobacterial toxin 'microcystin-LR'. The guidelines are "believed to be protective of human health against exposure to other microcystins (total microcystins) that may also be present" (Health Canada, 2016).

Health Canada's '*Guidelines for Canadian Drinking Water Quality*' recommend that microcystin-LR not exceed 1.5 µg/L. The '*Guidelines for Canadian Recreational Water Quality*' recommend that total cyanobacteria not exceed 100,000 cells/mL and total microcystins not exceed 20 µg/L (expressed as microcystin-LR).

A summary of blue-green algae monitoring on the Avalon Peninsula for the years 2007 to 2015 is available on the Department of Municipal Affairs and Environment's website at:

http://www.env.gov.nl.ca/env/waterres/quality/background/bga_reports/bga_rpt2016.pdf

Blue-Green Algae Occurrences in 2016

On June 3, a blue-green algae bloom was reported and observed in Miller's Pond (Figure 1). Samples were collected by Water Resources Management Division (WRMD) staff and analyzed at the York-Durham Regional Environmental Laboratory in Pickering, Ontario. Microcystin levels were below the detection limit of 0.05 µg/L. The organism responsible for the bloom and present in large quantities was identified as a genus of cyanobacteria known as *Anabaena*.

On July 8, WRMD staff visited Paddys Pond in response to a call from a conservation officer at the Paddy's Pond station. It was reported that during the previous week, water in the vicinity of the Forestry office was a 'bright neon green color'. During the WRMD visit on July 8, the neon green color was not visible, however there were noticeable clouds of green cells suspended in the water column, likely blue-green algae (Figure 2). Further discussions with a fisherman in the area of the reported bloom described the water the previous week as 'the color of fake golf green'. Laboratory analyses of samples collected on July 8 again showed Microcystin levels to

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be below the detection limit of 0.05 µg/L. This bloom was also caused by a proliferation of *Anabaena* species.

On July 17 a possible blue-green algae bloom at Grand Pond on the Hodgewater Line was observed and photographed by a member of the public (Figure 3). WRMD staff visited the site and collected samples on July 19. Microcystin levels were again below laboratory detection limits while the primary blue-green algae genus detected was again *Anabaena*.



Figure 1: Miller's Pond, June 3, 2016



Figure 2: Paddy's Pond, July 8, 2016



Figure 3: Grand Pond, July 17, 2016