

N-Nitrosodimethylamine (NDMA) in Public Drinking Water Supplies using Chloramination in Newfoundland and Labrador

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1.0 Background

N-Nitrosodimethylamine (NDMA) is a compound that can be found in both surface and groundwater sources. There are, however, no industrial or commercial uses of NDMA in Canada. NDMA can also be formed during treatment processes using chloramination.

The Guidelines for Canadian Drinking Water Quality (GCDWQ) specifies a maximum acceptable concentration (MAC) for N-nitrosodimethylamine (NDMA) in drinking water of 0.04 µg/L.

2.0 Scheduled Sampling

Chloramination is not a common disinfectant in Newfoundland and Labrador but is used by two systems. The two water treatment systems in Newfoundland and Labrador that utilize chloramination as a disinfectant are:

- Gander: Gander Lake (WS-S-0268)
 - Serviced area: SA-0274 - Gander
- St. John's: Bay Bulls Big Pond (WS-S-0691)
 - Serviced area SA-0488: Mt. Pearl
 - Serviced area SA-0188: Conception Bay South
 - Serviced area SA-0716: St. John's (+Mt. Pearl, +Paradise, +Portugal Cove-St. Phillips, +CBS)
 - Serviced area SA-0888: Portugal Cove-St. Phillips
 - Serviced area SA-0543: Paradise

To examine the existence and/or extent of NDMA formation in public water supplies of Newfoundland and Labrador, special monitoring was conducted on the two treatment systems that utilize chloramination.

3.0 Water Quality Results

Samples for the two systems that utilize chloramination were sent to a certified laboratory for water quality analysis for N-Nitrosodimethylamine (NDMA). The results from the sampling are shown in Table 1.

As shown in Table 1, all results for NDMA were less than the MAC of 0.04 µg/L.

Table 1: NDMA Sample Results

Water Supply	Serviced Area	Sample ID	Sample Date	NDMA (µg/L)
Gander Lake	SA-0274	2020-2735-03-TI-SP	18-Aug-20	0.0010
Bay Bulls Big Pond	SA-0488	2020-1234-03-TI-SP	9-Sep-20	0.0012
Bay Bulls Big Pond	SA-0188	2020-1235-03-TI-SP	10-Sep-20	0.0014
Bay Bulls Big Pond	SA-0716	2020-1236-03-TI-SP	15-Sep-20	0.0015
Bay Bulls Big Pond	SA-0888	2020-1237-03-TI-SP	15-Sep-20	< 0.0008
Bay Bulls Big Pond	SA-0543	2020-1238-03-TI-SP	15-Sep-20	0.0029

4.0 Path Forward

Regular water quality monitoring for NDMA will not be scheduled. However, public water supplies that are disinfected with chloramination will be monitored every four to five years to ensure that levels remain below GCDWQ. In addition, monitoring for NDMA will be considered for new water supplies that utilize chloramination or any new treatment plants that implement chloramination into the water treatment process.

5.0 References

Health Canada. 2011. *Guidelines for Canadian Drinking Water Quality: Guideline Technical Document: N-Nitrosodimethylamine (NDMA)*. Accessed via:
<https://www.canada.ca/en/health-canada/services/publications/healthy-living/guidelines-canadian-drinking-water-quality-guideline-technical-document-n-nitrosodimethylamine-ndma.html>