

Vinyl Chloride in Public Drinking Water Supplies with Polyvinyl Chloride (PVC) Infrastructure in Newfoundland and Labrador

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May 2013



1.0 Background

Vinyl chloride is a synthetic chemical with no known natural sources. It is a component of polyvinyl chloride (PVC) pipes that are utilized in drinking water distribution systems. It is slightly soluble in water and has the potential to leach the entrapped monomer into drinking water that flows through PVC pipes. (Health Canada, 1992). The maximum acceptable concentration for vinyl chloride in drinking water is 0.002mg/L (2µg/L). (Health Canada, 2012).

Product standards have been developed to minimize the quantity of free monomer present in PVC pipes. Standards include the requirement for a leaching test and a maximum allowable leachate for pipes used in drinking water systems. Only very low concentrations of vinyl chloride are likely to be present for pipes meeting these standards. (Health Canada, 1992). Newfoundland and Labrador require all drinking water system components to be certified to NSF standards.

To examine the existence and/or extent of vinyl chloride in tap water for public water supplies of Newfoundland and Labrador a special monitoring program was developed.

2.0 Scheduled Sampling

There were seventeen communities in Newfoundland and Labrador identified for this study. All communities have extensive use of PVC pipes in the drinking water distribution system. The communities identified are as follows:

- Bay L'Argent
- Bay Roberts
- Channel-Port aux Basques
- Ferryland
- Gillams
- Kippens
- Lawn
- Long Harbour-Mount Arlington Heights
- Musgrave Harbour
- New-Wes-Valley
- Pacquet
- Roddickton
- Spaniard's Bay
- Stephenville
- St. Alban's
- Twillingate
- Winterland

3.0 Water Quality Results

Samples for the seventeen communities that were selected for the study were sent to Exova Accutest Inc. for water quality analysis for vinyl chloride. The results from the sampling are shown in Table 1.

Table 1: Sample results for Vinyl Chloride

Community Name	Serviced Area	Source Name	Sample Date	Vinyl Chloride ($\mu\text{g/L}$)
Bay L'Argent	Bay L'Argent	Sugarloaf Hill Pond	2012-11-26	<0.2
Bay Roberts	Bay Roberts, Spaniard's Bay	Rocky Pond	2012-11-20	<0.2
Channel-Port aux Basques	Channel-Port aux Basques	Gull Pond & Wilcox Pond	2012-11-1	<0.2
Ferlyland	Ferlyland	Deep Cove Pond	2012-11-13	<0.2
Gillams	Gillams	Meaters Pond	2012-11-21	<0.2
Kippens	Kippens	Well Field	2012-11-7	<0.2
Lawn	Lawn	Brazil Pond	2012-11-27	<0.2
Long Harbour-Mount Arlington Heights	Long Harbour-Mount Arlington Heights	Shingle Pond and/ or Trout Pond (2 intakes)	2012-11-1	<0.2
Musgrave Harbour	Musgrave Harbour	Rocky Pond	2012-12-11	<0.2
New-Wes-Valley	Newtown-Templeton	Carter's Pond	2012-12-11	<0.2
Pacquet	Pacquet	Big Brook	2012-12-12	<0.2
Roddickton	Roddickton	East Brook Pond	2012-11-5	<0.2
Spaniard's Bay	Spaniard's Bay (+Upper Island Cove)	Kelly's Pond (Spider's Pond)	2012-11-20	<0.2
Stephenville	Stephenville	Well Field	2012-11-7	<0.2
St. Alban's	St. Alban's	Well Field	2012-11-22	<0.2
Twillingate	Twillingate	Wild Cove Pond	2012-11-13	<0.2
Winterland	Winterland	Well Field	2012-11-30	<0.2

All seventeen community results for vinyl chloride were less than detection limits. Consequently, vinyl chloride is significantly below the GCDWQ of $2\mu\text{g/L}$ for all communities selected in the study.

4.0 Path Forward

Regular water quality monitoring for vinyl chloride will not be scheduled for subsequent years.

5.0 References

Health Canada, 2012. *Guidelines for Canadian Drinking Water Quality Summary Table*. Guidelines for Canadian Drinking Water Quality.

Health Canada, 1992. *Guideline Technical Document: Vinyl Chloride*. Guidelines for Canadian Drinking Water Quality.