

Community Lead Testing Program: Round 1 (December 2007 – April 2008) Results

The Community Lead Testing Program Round 1 results show that the program is working and that the majority of the province's drinking water systems met the Ontario Drinking Water Quality Standard for lead. This report is intended to provide a summary of the results for the first round of testing, which took place between December 15, 2007 and April 15, 2008.

1.0 What is the Community Lead Testing Program?

In the spring of 2007, the ministry ordered 36 municipalities to sample for lead at residential taps in response to concerns that lead was being leached from plumbing components into drinking water. Following a review of these results, O. Reg. 170/03 was amended to require all municipal residential and non-municipal year-round residential systems to conduct lead testing in both plumbing (pipes inside the home or building) and distribution locations (pipes leading to the home or building) twice per year.

The results of the testing help determine whether there is a pattern of lead levels in drinking water within a particular community that indicates a need for action. Based on these findings, large municipal systems reporting a specific number of lead exceedances over time may be required to submit a corrosion control plan to reduce the concentration of lead in drinking water.

For additional details on lead in drinking water, visit the ministry's website at:
<http://www.ontario.ca/drinkingwater>

1.1 Who is required to sample?

Under the Community Lead Testing program, owners and operating authorities of municipal residential and non-municipal year-round residential systems are required to test samples of drinking water for lead twice per year.

1.2 Where are the samples taken from and how many samples are required?

Samples are taken from both residential and non-residential plumbing locations (referred to as "plumbing" samples), as well as distribution locations (referred to as "distribution" samples) following a sampling protocol under the regulation.

The protocol requires that for each plumbing location, 2 individual samples are taken and analyzed for lead. A single sample is taken at distribution locations. The number of locations sampled is dependent upon the population served.

For example, a system serving less than 100 residents must take 12 plumbing samples from six locations and 1 distribution sample from one location per sample period. Systems that serve more than 100,000 are required to take 220 plumbing samples at 110 locations and 20 distribution samples per sample period.

To obtain residential plumbing samples, drinking water system owners must recruit volunteers who wish to participate in the testing program. Priority is placed on obtaining samples from locations where lead is present or likely to be present (ie. older homes or neighbourhoods, areas with lead service connections or watermains, etc).

1.3 When does sampling occur?

Regulated drinking water systems are required to sample annually in two distinct sampling periods. The sample periods are established in order to consider the influence of temperature, if any, on lead concentration in drinking water. The two annual sampling periods are:

- December 15th – April 15th (“cold water” / “winter” sampling)
- June 15th – October 15th (“warm water” / “summer” sampling).

This report highlights the sampling results for Round 1, which occurred between December 15th, 2007 – April 15th, 2008. Sampling results for Summer 2008 – Round 2 (June 15th, 2008 through October 15th, 2008) will be included in the next report.

1.4 What is the standard for lead in drinking water?

The Ontario Drinking Water Quality Standard for lead is 10 micrograms per liter (10 µg/L).

1.5 How are test results communicated to building occupants?

Drinking water system owners are required to provide a copy of test results to the occupant within seven days of receipt of the results. This report must include a statement indicating whether the results are greater than the Ontario Drinking Water Quality Standard. If the results are greater than the standard, advice from the system owner/operating authority and local health unit is provided on actions that can be taken by the building occupants to reduce exposure to lead. Sources of lead within a system can include sources within the distribution system, service lines and connections, as well as plumbing and fixtures within a home or building.

1.6 What happens if lead is found in a drinking water system?

The drinking water system owner and operating authority are required to report elevated levels of lead in samples to the Ministry of the Environment and to the local medical officer of health. Laboratories licensed by the ministry are also required to report all lead test results for regulated samples to the ministry.

The regulation requires a corrosion control plan be submitted for large municipal residential systems that report greater than 10 per cent plumbing exceedances in any two out of three sampling rounds and if at least two samples in each of those two rounds exceeded the standard. The corrosion control plan requires the drinking water system owners/operating authority to identify potential sources of lead and to develop a plan to reduce exposure to all users.

1.7 What is meant by corrosion?

Depending on the properties of the water, the water flowing through a pipe can wear away the inner surface of the pipe and dissolve some of the metal making up the pipe. This dissolving of the pipe's inner surface is called corrosion. If the inner surface contains lead, corrosion can result in lead entering the drinking water. By adjusting the properties of the water, it can be made less corrosive and therefore reduce the amount of lead dissolving from the pipes into the water.

2.0 Winter 2007/08 Community Lead Testing Results

The following results are based on over 37,000 plumbing and 5,100 distribution samples taken by approximately 600 municipal residential systems, and 400 non-municipal year-round residential systems. The samples were taken between December 15th, 2007 – April 15th, 2008.

2.1 Sampling Compliance

As shown in Table 1, approximately 600 municipal residential and 400 non-municipal year-round residential systems conducted sampling. Over 99 per cent of municipal residential systems submitted at least one sample as part of the program. Of the systems that conducted sampling, 91 per cent were able to take at least three quarters of the required number of plumbing samples.

This indicates the system owners were generally able to obtain volunteers for the program. As would be anticipated, systems with a smaller population base often had more difficulty meeting the requirements for plumbing samples.

Non-municipal year-round residential systems, however, had poor compliance during Round 1 in terms of providing the necessary number of samples.

While 55 per cent of non-municipal year-round residential systems sampled plumbing under the community lead testing program; only 35 per cent were able to take at least three-quarters of the required number of samples.

The ministry is currently reviewing this low compliance rate, and believes the lack of both volunteers and sampling locations (particularly for distribution samples) are two primary reasons for not achieving full compliance. The ministry is also considering additional outreach and education to improve participation in future rounds of testing.

As previously mentioned, compliance with the lead sampling program relies heavily on public participation, particularly for residential and non-residential plumbing samples. Drinking water system owners must take reasonable measures to obtain volunteers to meet their regulatory requirements. If sufficient volunteers are unavailable, the owner may apply for regulatory relief to reduce the number of samples.

In Round 1, approximately 250 municipal and non-municipal drinking water systems were granted some level of relief from meeting full regulatory requirements. The majority of these systems applied for a partial reduction in the number of samples due to insufficient volunteers or insufficient sampling locations (ie. single building, no “non-residential” plumbing, etc). Table 1 below highlights overall levels of compliance with submission requirements.

Table 1: Regulated Systems & Compliance

	Plumbing		Distribution	
	# MRS **	# NMYRR***	# MRS	# NMYRR
# of Systems Required to Conduct Sampling	597	429	622	407
% of Systems that Conducted Sampling*	99%	55%	98%	39%
% of Systems that Completed at least 75% of their sampling requirements	91%	35%	88%	24%

* Refers to the percentage of systems submitting at least one sample under the Community Lead Testing Program.

** Municipal Residential Systems

***Non- Municipal Year-Round Residential

2.2 Drinking Water Quality Results

This section is subdivided into 3 sub-sections:

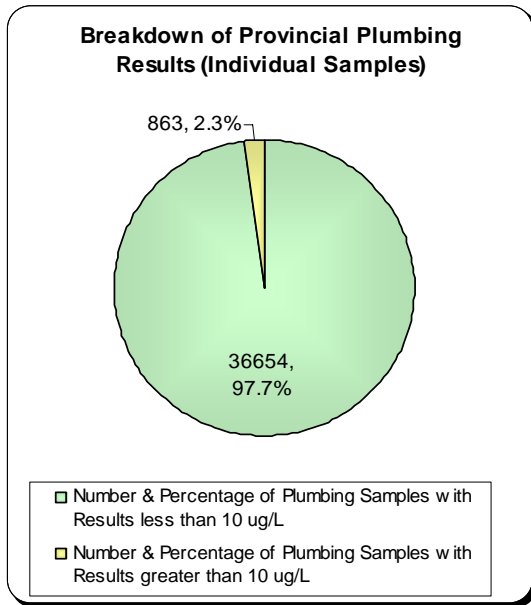
- 2.2.1 **Provincial summary of water quality** – this sub-section summarizes the results of all individual plumbing and distribution samples taken across the province.
- 2.2.2 **Summary of water quality results based on system category** – this sub-section breaks down the plumbing and distribution results contained within the “Provincial Summary” section by “municipal residential drinking water systems” and “non-municipal year-round residential drinking water systems”.
- 2.2.3 **Summary by drinking water system** – this sub-section provides further details on the number of systems where all samples met the provincial standard.

2.2.1 Provincial Summary of Water Quality

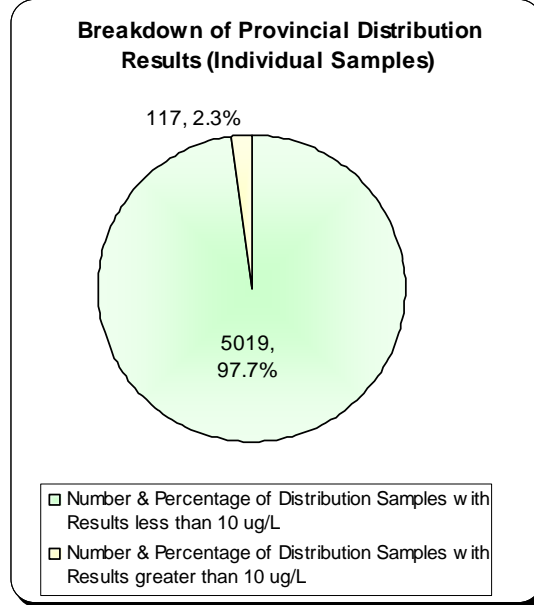
As shown in Table 2 below, the overall provincial water quality results were good. The vast majority of samples met the provincial standard for both plumbing and distribution samples. As shown visually in Graphs 1 & 2 below, 97.7 per cent or 36,654 out of 37,517 plumbing samples taken throughout the province met the standard. Similarly, 97.7 per cent, or 5,019 out of 5,136 distribution samples taken throughout the province met the provincial standard.

	Plumbing	Distribution
# of Samples Taken During Round 1	37,517	5,136
Average Concentration (µg/L)	1.97	1.92
# of Samples Above 10 µg/L	863	117
% of Exceedances	2.3%	2.3%

Graph 1: Provincial Plumbing Results



Graph 2: Provincial Distribution Results



2.2.2 Summary of Water Quality Results by System Category

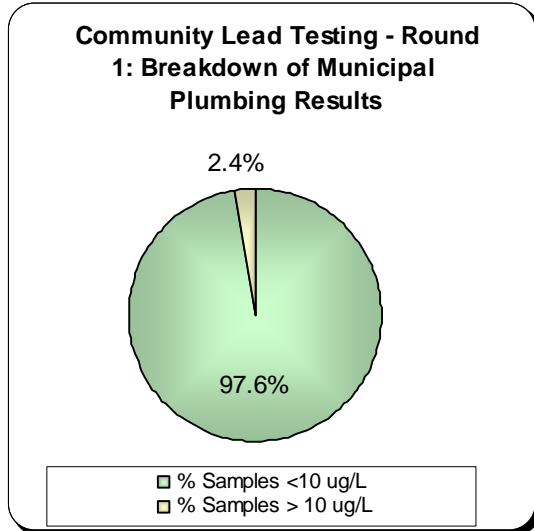
The average municipal residential plumbing result for all submitted samples was 2.0 µg/L, while non-municipal year-round residential systems had an average of 1.5 µg/L. Distribution results were similar with the average results well below the standard, as shown in Table 3, below.

Table 3: Water Quality Results

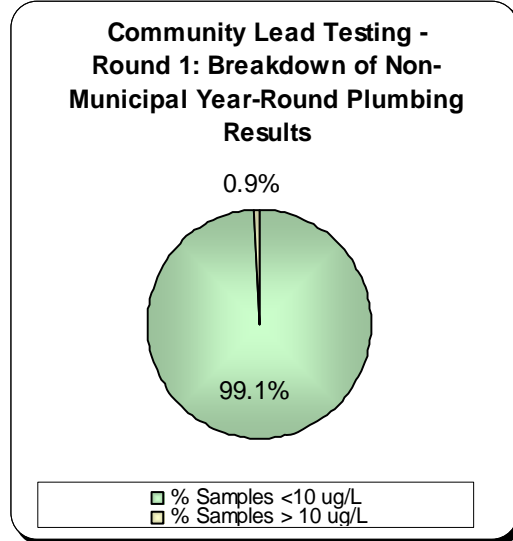
		Plumbing	Distribution
Municipal	Average Concentration of Lead (µg/L)	2.0 µg/L	2.0 µg/L
	% of Samples that met the ODWQS (less than 10 µg/L)	97.6%	97.6%
	% of Drinking Water Systems that reported all samples met the ODWQS	74%	88%
Non-Municipal Year-Round Residential	Average Concentration of Lead (µg/L)	1.5 µg/L	0.9 µg/L
	% of Samples that met the ODWQS (less than 10 µg/L)	99.1%	99.6%
	% of Drinking Water Systems that reported all samples met the ODWQS	95%	99%

As shown in Graph 3 below, over 97.6 per cent of all municipal plumbing samples met the standard. Graph 4 indicates that 99.1 per cent of plumbing results from non-municipal year-round residential systems were below 10 µg/L.

Graph 3: Municipal Residential Plumbing Results



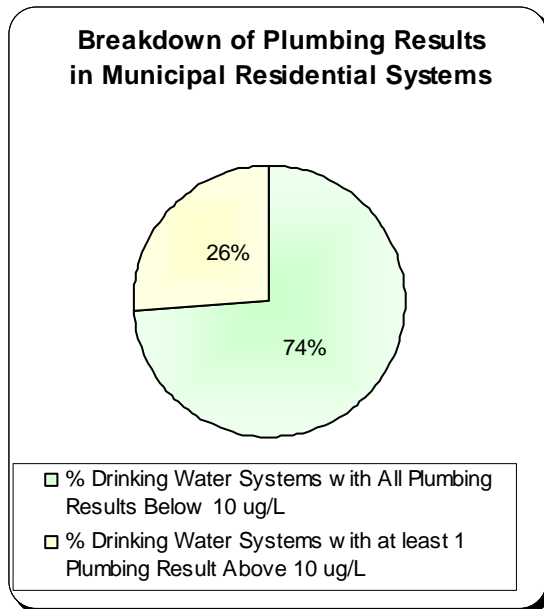
Graph 4: NMYRR Plumbing Results



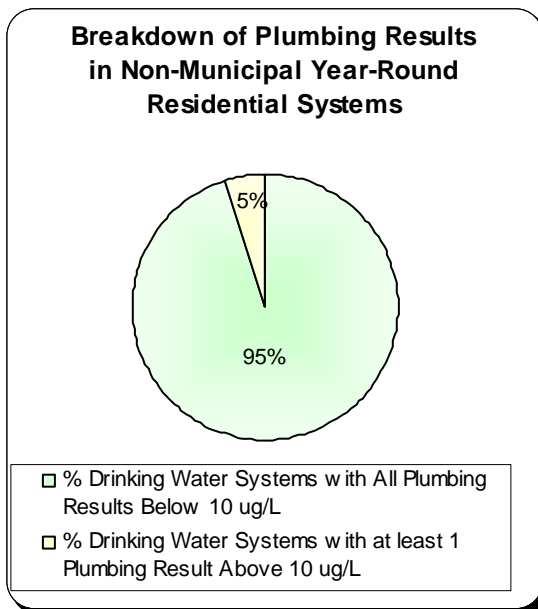
2.2.3 Summary by Drinking Water System

A review of drinking water systems-wide results revealed that 74 per cent of all municipal systems and 95 per cent of all non-municipal year-round residential systems reported that all plumbing samples met the provincial standard in the winter sampling round. The results did not indicate a correlation between broad geographic locations and samples which exceeded the provincial standard. For complete details on a particular system required to conduct sampling, contact the drinking water system owner/operators. The results are shown in Graphs 5 and 6.

Graph 5: Municipal Residential Systems Residential



Graph 6: Non-Municipal Year-Round Residential



2.3 Corrosion Control Planning

Corrosion control planning is an important aspect of O. Reg. 170/03 and applies to large municipal residential systems. If greater than 10 per cent of plumbing samples exceeded the standard in two out of three sampling rounds and in each of those two rounds at least two samples exceeded 10 µg/L, these systems are required to submit a corrosion control plan to the ministry for approval. As previously mentioned, two samples (sample set) are taken at each location and tested for lead. However, only the sample with the highest concentration is used to determine possible corrosion control actions.

Identification of systems that may be required to prepare a corrosion control plan would be based on the results of at least two sample rounds. At the time of this report, analysis has only been completed on the first round of testing.

3.0 Conclusions

The Community Lead Testing Program Round 1 results show that the program is working and that the majority of the province's drinking water systems met the Ontario Drinking Water Quality Standard for lead. The results will be used to help identify through further sampling, systems that need to develop plans to reduce lead concentrations in drinking water.

The implementation of this program demonstrates the strength of Ontario's drinking water safety net, which lies in cooperative approaches between the province and local drinking water system owners, municipalities and public health units to address drinking water issues.

Through community education and outreach, the ministry and partners want to improve participation in the program in future sampling rounds. Furthermore, the ministry is committed to providing a detailed report on the first year of sampling following the analysis of the "Summer 2008" results. This report is scheduled for release in Spring 2009.

If you have specific questions regarding lead testing results in your community, contact your local drinking water system owner. For more general information on lead, please visit the ministry's website at: www.ontario.ca/drinkingwater.

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