GUIDE TO COLLECTION AND HANDLING OF DRINKING WATER SAMPLES

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Practices for Collection and Handling of Drinking Water Samples

Water treatment plant owners, operators, and individuals responsible for collecting and submitting drinking water samples in Ontario can consult the Ministry of the Environment, Conservation and Parks (MECP) document titled 'Practices for Collection and Handling of Drinking Water Samples.' This guidance outlines requirements for sample collection, labeling, storage, transportation, and chain-of-custodies under Ontario's Safe Drinking Water Act, 2002. You can request a copy of the document from your lab contact or use the link noted below to acquire a copy. Please note, this document takes precedence over Table 1 in the MECP document for all samples submitted to Eurofins Environment Testing Canada Inc. (license #2318).
https://www.ontario.ca/page/practices-collection-and-handling-drinking-water-samples.

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Transport of Drinking Water Samples

The proper collection and handling of drinking water samples is crucial to obtaining valid data. Samples should be taken from cold water taps where drinking water is consumed. It is recommended that all samples be delivered to the laboratory as soon as possible after sampling. Samples should be kept cool (refrigerated) if immediate shipping is not possible. Freezing a sample is not acceptable (unless otherwise noted in the tables below). Optimal temperature conditions during transport are between 4 and 10°C. Failure to ensure samples are kept in the acceptable temperature range may impact test results. Samples should be packed with a minimum of two ice packs or a suitable leak-proof container of ice and shipped in insulated boxes/coolers. Packing the sample with loose ice is not recommended as it may contaminate the sample. The ice should be encased in waterproof packaging or a sealed container. If possible, the sample should be chilled to between 4 and 10 °C, but not frozen, prior to packing. In the summer months additional icepacks will be required to keep the samples at the optimal temperature. During the winter months, please ensure the samples are insulated well enough to keep them cool but protect them from freezing.

Sampling Handling Requirements

The below tables summarize the sampling requirements for commonly requested parameters for drinking water samples. For parameters not appearing in the tables below please contact your Project Manager before sampling for proper instructions. Do not rinse preservatives out of sample bottles. Use caution when handling (many preservatives are either acids or bases).

Microbiology

Parameter/Test Group	Sample Container	Minimum Volume (mL)	Preservative	Maximum Holding Time	Storage Conditions at Laboratory	Comments
Total Coliforms, E.Coli, HPC, Background Counts by membrane filtration	250 mL plastic, sterile	200 mL	Sodium thiosulphate	48 hours	4 ± 3 °C	

Inorganics

Parameter/Test Group	Sample Container	Minimum Volume (mL)	Preservative	Maximum Holding Time	Storage Conditions at Laboratory	Comments
Metals (except mercury and minerals) by ICP/OES or ICP/MS	125 mL plastic	100 mL	Nitric acid to pH <2. Samples may be preserved at the laboratory up to 14 days after collection.	60 days	Ambient	Samples preserved at the laboratory must be held for 24 hours before analysis (with a report qualifier). Bottles with aluminum lined caps are not acceptable.
Sodium by ICP/OES	250 mL to 1L plastic	100 mL	None	30 days	4 ± 3 °C	
Mercury by CVAA	125 mL glass	100 mL	Hydrochloric acid	14 days	Ambient	

Inorganics continued

Parameter/Test Group	Sample Container	Minimum Volume (mL)	Preservative	Maximum Holding Time	Storage Conditions at Laboratory	Comments
Mercury by ICP/MS *The bottle for mercury by CVAA may also be used.	125 mL plastic	100 mL	Nitric acid	14 days	Ambient	
Lead (O. Reg. 170/03, plumbing samples) by ICP/MS *Contact the laboratory for specific sampling instructions.	1 L plastic	900 mL	Nitric acid to pH <2. Samples may be preserved at the laboratory up to 14 days after collection.	60 days	Ambient	Samples preserved at the laboratory must be held for 24 hours before analysis (with a report qualifier). Bottles with aluminum lined caps are not acceptable.
Lead (O. Reg. 243/07) by ICP/MS *Contact the laboratory for specific sampling instructions.	1 L plastic	900 mL	Nitric acid to pH <2. Samples may be preserved at the laboratory up to 14 days after collection.	60 days	Ambient	Samples preserved at the laboratory must be held for 24 hours before analysis (with a report qualifier). Bottles with aluminum lined caps are not acceptable.
Nitrate and Nitrite by Ion Chromatography or Automated Colorimetry	250 mL to 1L plastic	125 mL	None	7 days	4 ± 3 °C	Samples may be frozen.
Fluoride, Chloride, Sulphate, Bromide by Ion Chromatography or ISE	250 mL to 1L plastic	100 mL	None	28 days	4 ± 3 °C	
Turbidity by turbidimeter	250 mL to 1L plastic	100 mL	None	2 days	4 ± 3 °C	
pH, alkalinity, conductivity by manual meter or automated instrument	250 mL to 1L plastic	100 mL	None	14 days for pH and alkalinity, 28 days for conductivity	4 ± 3 °C	
Colour (apparent or true) by colorimetry	250 mL to 1L plastic	100 mL	None	14 days	4 ± 3 °C	
Sulphide by colorimetry	125 mL plastic	100 mL	Zinc acetate and sodium hydroxide	14 days	4 ± 3 °C	
Dissolved Organic Carbon by IR	125 mL plastic	100 mL	None	28 days	4 ± 3 °C	
Total Dissolved Solids by Gravimetric analysis	250 mL to 1 L plastic	100 mL	None	14 days	4 ± 3 °C	

Organics

Parameter/Test Group	Sample Container	Minimum Volume (mL)	Preservative	Maximum Holding Time	Storage Conditions at Laboratory	Comments
Volatile Organic Compounds (including THMS) by GC/MS	40 mL amber glass vials with Teflon®-clad silicon rubber septa	80 mL	Sodium thiosulphate	7 days	4 ± 3 °C	There must be zero headspace (no bubbles) in the sample vials.
Organochlorine Pesticides and PCBs by GC/ECD	1 L amber glass	900 mL	Sodium thiosulphate	20 days to extraction/40 days after extraction	4 ± 3 °C	If insufficient volume of sample is received, the results will be reported with a corresponding increase in detection limits.
Semi-Volatile Organic Compounds by GC/MS	1 L amber glass	900 mL	Sodium thiosulphate	20 days until extraction, 40 days after extraction	4 ± 3 °C	If insufficient volume of sample is received, the results will be reported with a corresponding increase in detection limits.
Triazines, Carbamates, and OP Pesticides by GC/MS	1 L amber glass	900 mL	Sodium Thiosulphate	14 days until extraction, 28 days after extraction	4 ± 3 °C	If insufficient volume of sample is received, the results will be reported with a corresponding increase in detection limits.
Phenoxyacid Herbicides by GC/MS	1 L amber glass	900 mL	Sodium Thiosulphate	20 days until extraction, 40 days after extraction	4 ± 3 °C	If insufficient volume of sample is received, the results will be reported with a corresponding increase in detection limits.
Haloacetic Acids (HAA) by GC/ECD	2 x 40 mL clear glass vials	80 mL	Ammonium chloride	14 days	4 ± 3 °C	
Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS *Contact the laboratory for specific sampling instructions.	2 x 125 mL HDPE plastic	250 mL	Sodium thiosulphate	28 days to extraction/28 days postextraction	4 ± 3 °C	If insufficient volume of sample is received, the results will be reported with a corresponding increase in detection limits.
Diquat, paraquat, diuron, and glyphosate by HPLC	250 mL to 1 L plastic	200 mL	Sodium thiosulphate	20 days	4 ± 3 °C	

References

Ministry of the Environment, Conservation, and Parks, (MECP). (2009, April 1). Practices for the Collection And Handling of Drinking Water Samples. Ontario.ca. https://www.ontario.ca/page/practices-collection-and-handling-drinking-watersamples.