

June 2006

Technical Update

For Municipal Residential Drinking Water Systems under O. Reg. 170/03

Following public consultation, on June 5, 2006, O. Reg. 170/03 was amended. These technical amendments are designed to safeguard the quality of Ontario's drinking water, while making the regulation more workable and affordable for owners and operators of municipal and non-municipal year round residential drinking water systems and systems serving designated facilities. They also add clarity and flexibility to the testing and operational regimes set out in O. Reg. 170/03. For full details, please see: http://www.e-laws.gov.on.ca/DBLaws/Regs/English/030170_e.htm

Drinking Water Testing for Chemical Parameters

The *Safe Drinking Water Act, 2002* requires owners and operating authorities of regulated drinking water systems to ensure that the water provided by the system meets prescribed drinking water quality standards.

To this end, the Drinking-Water Systems Regulation (O. Reg.170/03) prescribes the testing of drinking water grab samples for chemical parameters. The frequency and type of testing required depends on the category of the drinking water system. The categories of drinking water systems are defined in the Regulation. Continuous monitoring equipment at the drinking water system may be permitted or is in some cases, required, under the Regulation for turbidity, fluoride, free chlorine residual, and total chlorine residual for the purposes of determining combined chlorine residual.

On October 1, 2003, the *Safe Drinking Water Act, 2002*, required that laboratories be licensed by the Ministry of the Environment for specific drinking water testing. The chemical tests performed by the licensed laboratory must be specified in their Drinking-Water Testing Licence which authorizes the conduct of the test. Continuous monitoring equipment that is part of the drinking water system is exempt from the requirement for laboratory licensing.

Chemical parameters to be measured

Large municipal residential systems must sample for inorganic and organic chemicals listed on Schedules 23 and 24 of O. Reg. 170/03 at least once every 12 months (surface water or GUDI source) or once every 36 months (ground water source). Small municipal residential systems must collect and submit these samples once every 60 months. Required minimum sampling frequencies for other chemicals range from quarterly to once every 60 months – refer to Schedule 13 of O. Reg. 170/03 for more details. In some cases, parameters and concentration limits are also specified in approvals, orders and other directives issued by the Ministry of the Environment.

Sample collection and handling considerations

The licensed laboratory conducting the testing is required to provide direction to the drinking water system owner/operator regarding sample collection and handling. The owner/operating authority is required by the Regulation to follow this direction. If the licensed laboratory does not have their own specific written instructions, they can provide

the owner/operating authority with the Ministry of the Environment document, *Practices for the Collection and Handling of Drinking Water Samples* (June 2003).

Unless otherwise specified by O. Reg. 170/03, chemical sampling is required to be done from a point at which water enters the drinking water systems' distribution system or plumbing that is connected to the drinking water system. Aerators, hose attachments, filters and strainers should be removed from taps as they may alter the chemistry of the sample so that it no longer represents the water as supplied by the treatment system. Lines should be flushed for at least 2 to 5 minutes to minimize the effects of local plumbing. A dedicated tap or spigot for regulatory sampling is recommended

Sample collection and handling practices are crucial to obtaining accurate, quality data. Person(s) collecting the samples should be properly trained with respect to sample handling considerations. The best method for collecting a grab sample is to collect the sample directly into the container provided by the licensed laboratory. In general, plastic bottles are acceptable for the collection of samples for inorganic chemical testing and glass containers are necessary for most organic parameters. Light-proof containers are required for compounds which degrade in the presence of UV-light.

Special sampling techniques are necessary for some tests such as the test for volatile organic compounds. As these compounds vaporize, it is important to exclude air from the sampling container by filling slowly (avoiding turbulence) to overflowing until a convex meniscus (dome) is present. An air bubble should not be present in the container when it has been capped.

Some tests require immediate sample preservation to stabilize the target chemical being analyzed in order to ensure that its concentration at the time of analysis is the same as it was at the time of collection. When sample bottles have been pre-charged with a preservative, it is important that the sampler does not rinse the container prior to sample collection or allow the container to overflow while filling it.

Storage and transportation requirements

Preservation may not be required for some tests. For perishable parameters, the sample must be received at the licensed laboratory and analyzed within a short period of time. The laboratory must provide the drinking water system owner/operator with special instructions on "holding times" for the various tests. Perishable chemical parameters include nitrate and volatile organic compounds. Samples must be handled and shipped to the licensed laboratory in accordance with directions provided by the laboratory. If ice packs are recommended, and loose ice is used, it should be encased in water-proof packaging or a sealed container to prevent it from contaminating the sample.

Finding a licensed laboratory

The Ministry of the Environment maintains a contact listing of licensed laboratories and the test classes for which they are licensed on its web site at <http://www.ene.gov.on.ca/envision/water/sdwa/lablicensing.htm>

For more information contact:
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