

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

Treatment Equipment Requirements

The Drinking Water Systems Regulation (O. Reg. 170/03), made under the *Safe Drinking Water Act, 2002* (SDWA), prescribes the treatment requirements for municipal residential drinking water systems.

Applicability of the treatment equipment requirements under Schedule 1 of O. Reg. 170/03

Based on the definitions set out in the *Safe Drinking Water Act, 2002*, and its regulations, the following drinking water systems would be considered to be municipal residential drinking water systems:

- any drinking water system owned by a municipality or a municipal service board or a corporation established under the *Municipal Act, 2001* that is serving six or more private residences,
- any drinking water system from which a municipality obtains or will obtain water for the purpose of serving six or more private residences under a contract between the municipality and the owner of the system, and
- any drinking water system that is serving six or more private residences and is established after June 2, 2003 under an agreement with a municipality pursuant to part VI of the *Planning Act*, if the agreement provides that the ownership of the system may be transferred to a municipality or a municipal service board or a corporation established under the *Municipal Act, 2001*.

Minimum levels of treatment and treatment equipment requirements

O. Reg. 170/03 establishes specific requirements for the minimum levels of treatment that must be provided and the types and capabilities of treatment processes and equipment that can be used in achieving these levels of treatment when drinking water is being produced and distributed to the public.

The requirements for drinking water systems using ground water as a source of raw water, differ from those using surface water, which include systems using ground water under the direct influence of surface water (GUDI). Also, the Regulation makes a clear distinction between the requirements applicable to the processes of primary and secondary disinfection.

In addition, the Regulation requires that the **Procedure for Disinfection of Drinking Water in Ontario** be used to provide clarification of the specific regulatory treatment requirements. This document must be used to determine the treatment capabilities of various treatment processes (including pathogen removal credit allocations) and the requirements related to the operation of treatment equipment.

The prescribed treatment requirements may be summarized as follows:

<p>Primary Disinfection: Municipal residential systems that obtain all their water from a raw water supply that is ground water</p>	<ul style="list-style-type: none"> • Must have water treatment equipment that is designed to be capable of achieving, at all times, <u>primary disinfection</u> in accordance with the ministry’s <i>Procedure for Disinfection of Drinking Water in Ontario</i>, including at least 99 per cent removal or inactivation of viruses. • Must operate the equipment in accordance with the <i>Procedure for Disinfection of Drinking Water in Ontario</i>, and in such a manner that it achieves the required level of treatment.
<p>Chemically Assisted Filtration and Primary Disinfection: Municipal residential systems that obtain their water from a raw water supply that is surface water which include ground water under the direct influence of surface water</p>	<ul style="list-style-type: none"> • Must have water treatment equipment that is designed to be capable of achieving, at all times, <u>chemically assisted filtration and primary disinfection</u> in accordance with the ministry’s <i>Procedure for Disinfection of Drinking Water in Ontario</i>, including at least 99 per cent removal or inactivation of <i>Cryptosporidium</i> oocysts, 99.9 per cent removal or inactivation of <i>Giardia</i> cysts, and 99.99 per cent removal or inactivation of viruses. Other water treatment equipment, which in the Director’s opinion (site specific approval for municipal residential systems) is designed to produce water of equal or better quality, is also acceptable. • Must operate the equipment in accordance with the <i>Procedure for Disinfection of Drinking Water in Ontario</i>, and in such a manner that it achieves the required level of treatment.

<p>Secondary disinfection:</p> <p>All municipal residential systems, except for small municipal residential systems that have installed Point of Entry treatment units in accordance with Schedule 3 of the Regulation on the entrance to every building that is part of a private residence, designated facility or public facility served by the system.</p>	<ul style="list-style-type: none"> • Must have secondary disinfection equipment designed to be capable of achieving at all locations within the distribution system <ul style="list-style-type: none"> ▶ a free chlorine residual of 0.2 mg/L, for systems that provide chlorination but do not provide chloramination, or ▶ a combined chlorine residual of 1.0 mg/L, for systems that provide chloramination, or ▶ other water treatment equipment, which, in the Director’s opinion (site specific approval for municipal residential systems), is designed to provide equivalent or better secondary disinfection. • Must operate the equipment in accordance with the <i>Procedure for Disinfection of Drinking Water in Ontario</i>, and in such a manner that at all times and at all locations within the distribution system <ul style="list-style-type: none"> ▶ the free chlorine residual never less than 0.05 mg/L for systems that provide chlorination but do not provide chloramination, or ▶ the combined chlorine residual is never less than 0.25 mg/L for systems that provide chloramination.
<p>Treatment Selection and Design:</p> <p>All municipal residential systems</p>	<p>The selection and design of specific unit process and equipment for primary disinfection, chemically assisted filtration and disinfection and secondary disinfection must conform with the requirements contained in the <i>Procedure for Disinfection of Drinking Water in Ontario</i>.</p>

<p>Continuous Monitoring, Recording, and Alarm Equipment:</p> <p>All municipal residential systems</p>	<p>The treatment system must have equipment that continuously monitors and records the performance of primary disinfection equipment.</p> <p>The continuous monitoring equipment must have either:</p> <ul style="list-style-type: none"> - a feature that ensures that no water is directed to users when either the adequate primary disinfection is not being achieved or the monitoring equipment fails, until a qualified person addresses the problem, or - an alarm system that sounds, at a location where a person is always present, when either the adequate primary disinfection is not being achieved or the monitoring equipment fails, so that a qualified person can promptly take appropriate action, or be promptly dispatched to take appropriate action in accordance with the monitoring system alarm and response standards set out in the regulation.
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Procedure for Disinfection of Drinking Water in Ontario

The *Procedure for Disinfection of Drinking Water in Ontario* (“disinfection procedure”) is Ministry of the Environment’s procedure supporting O. Reg.170/03 on:

- disinfection (primary disinfection), including any pre-disinfection treatment (e.g. chemically-assisted filtration), necessary to be credited with the required level of removal or inactivation of pathogens potentially present in the raw water supply (groundwater, surface water, or ground water under direct influence of surface water);
- the maintenance of a disinfectant residual wherever it is required in a distribution system or plumbing (secondary disinfection);
- control of disinfection by-products; and
- disinfection following drinking water system construction or repair.

The disinfection procedure provides clarification for the selection of specific types of treatment processes and equipment (including monitoring equipment), and for determining the design capabilities and operational requirements for the purpose of compliance with the Regulation, including the pathogen removal credits attributable to certain processes and/or designs. The disinfection procedure is adopted by reference in O. Reg. 170/03. It replaces the ministry’s *Procedure B13-3, Chlorination of Potable Water Supplies in Ontario, January, 2001*.

Situations where a system may not have to comply with treatment requirements

Under subsection 38 (2) of the *Safe Drinking Water Act, 2002*, the Director, through conditions of an approval issued to a municipal drinking water system, may provide relief from a duty of

strict compliance with a regulatory requirement related to water treatment (subsection 38 (2) (a)), or may impose a condition that is less onerous than the regulatory requirement in its place (subsection 38 (2) (b)), if a written application is made in accordance with the requirements of subsection 38 (3) (a) of the Act.

Schedule 4 of O. Reg. 170/03 applies to a condition imposed by the Director under subsection 38 (2) clause (a) where the Director issues an approval with a condition granting relief from all regulatory requirements related to water treatment in Schedule 1 (“full relief”). The Director cannot impose a condition providing relief from the duty of strict compliance with a regulatory requirement under subsection 38 (2) (a) if the drinking water system obtains water from a raw water supply that is surface water.

For such an application for “full relief” to be considered by the Director, the owner must ensure that all of the requirements set out in Schedule 4 of the regulation have been met. These requirements include a written assessment prepared by a hydrogeologist and public consultation on the proposed relief condition undertaken prior to submitting the application. An application for “full relief” will be rejected if any of these requirements are not met, or the application involves a system that obtains all or some of its water from a raw water supply that is surface water, including ground water under the direct influence of surface water.

The regulation also prohibits the Director from imposing a condition for “full” relief for a period that exceeds five years. Owners must re-apply near the end of that period if they want “full” relief to continue

Note: Schedule 4 of O. Reg. 170/03 applies to a condition granted under subsection 38 (2) clause (a) of the Act for relief from the duty of strict compliance with a regulatory requirement only where the Director has provided for relief in the condition from all specified treatment requirements as set out in Schedule 4, s. 4-2 (“full relief”). In all other cases, such as relief from only some of the treatment requirements or relief from non-treatment requirements (e.g., monitoring or reporting), the application requirements and restrictions will be set on a case-by-case basis in pre-application consultation with the ministry.

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