



The header features the Ontario logo on the left and the text 'Ontario' next to it. On the right, it says 'Ministry of Health and Long-Term Care'. Below this is a search bar with a 'SEARCH' button. To the right of the search bar are links: '| home | central site | contact us | site map | français |'. Below the search bar are four navigation links: 'Public Information', 'Health Care Providers', 'News Media', and 'Text Only Version'. At the bottom of the header, there is a blue banner with the word 'Section' on the left and 'Public Information' on the right.

Water Safety : Choosing a Water Treatment System

While there are many technologies out there, each one is effective for a specific water contamination concern. No single treatment technology works for all. So, when you're selecting and applying a water treatment system, use great care to make sure it is the right one for your particular situation. Let's examine some circumstances that can make treatment necessary. Treatment alone may not be enough to guarantee a consistent supply of safe and high quality water. In some cases, such as below-grade wells, structural changes may need to be made to maintain good water quality.

Why treat your water supply?

You may have to treat your well water to make it safe to drink if you draw your water supply from water that is *highly vulnerable* to contamination – described in [Get Acquainted with Your Well](#); a poorly constructed well or one that cannot be repaired to meet today's well construction standards; or a source that has periodic episodes of poor water quality.

If any of these situations applies to you, your drinking water may be susceptible to harmful organisms (pathogens such as bacteria, parasites and viruses), chemicals and other changes to your water's taste, odour and/or appearance.

As you're learning more about treatment systems, just a reminder: begin with a properly built and maintained well, and have your water tested regularly. Otherwise, you may always be treating a problem, and never resolving it.

Ask around

It's always in your best interest to find out as much as possible about your well. Your local [public health unit](#), the Ontario [Ministry of the Environment](#) (MOE), your Water Well Record (available from MOE), water well drillers, municipal staff, environmental consultants and neighbours may all have useful information. As a well owner, you need to review all this information to see if testing your well water is needed.

Choosing a treatment system

Treating highly vulnerable sources can be costly and tricky

Treatment systems can be used on water from most sources in order to make it safe for drinking. However, treating highly vulnerable water sources is usually expensive and difficult, and will require a great deal of your time to make sure the equipment is looked after properly. Contact your local [public health unit](#) and/or a water treatment professional when selecting, installing and operating a treatment system.

By contrast, treating water from properly constructed and maintained wells is generally easier, but again the technology used must be selected carefully.

Remember their limitations!

Here are a few key limitations of treatment systems.

Disinfecting a well with chlorine works against bacteria and many viruses, but cannot be relied upon to kill all parasites. Also, chlorine cannot be relied on to kill tiny organisms embedded inside tiny dirt particles. For water sources that may be contaminated with surface water, an effective filtration treatment will also be needed. There are many treatment systems on the market. Some of these are referred to as *point-of-use* systems, where the equipment is attached to one faucet. Others are *in-line* and provide treated water for an entire home. These systems are based on different technologies, ranging from chemical treatment to mechanical treatment (for example, filters to ultra-violet light). Each system has its benefits and limitations.

Heating water to a rolling boil for at least one minute is an effective method for killing harmful organisms. However, it does not remove or neutralize most chemicals and other dissolved contaminants and it is not practical for treating large quantities of water.

Don't scrimp on installation

For each water treatment system to remain effective, it must be installed, operated and maintained as directed by the manufacturer. **In water treatment, there are no shortcuts!**

Private Well Water Treatment Technologies

Method	Uses	Limitations	Comments
Distillation	<ul style="list-style-type: none"> kills all microbes by heat removes heavy metals and nitrates often used in combination with activated carbon filters 	<ul style="list-style-type: none"> can remove only chemicals (like fluoride, iron or nitrates) with a higher boiling point than water 	<ul style="list-style-type: none"> needs regular de-scaling and weekly disinfecting with bleach or heat can concentrate chemicals with boiling points lower than water in distilled water (like ammonia)
Ultra-Violet	<ul style="list-style-type: none"> kills bacteria and viruses 	<ul style="list-style-type: none"> needs filtration to remove microbes embedded in dirt particles, including parasites 	<ul style="list-style-type: none"> needs very fine (5 micron pre-filter), slow water flow, and UV lamp must be kept clean
Chlorination	<ul style="list-style-type: none"> kills bacteria and viruses can be used to remove some forms of iron, as long as water is filtered after chlorination 	<ul style="list-style-type: none"> needs filtration to remove microbes shielded or embedded in dirt particles, including parasites 	<ul style="list-style-type: none"> needs careful handling of chlorine, testing of chlorine levels, and maintenance of dosing pump
Ozonation	<ul style="list-style-type: none"> kills most microbes, but not cryptosporidium removes organic compounds, including pesticides can be used in combination with activated carbon filters 	<ul style="list-style-type: none"> needs filtration to remove microbes embedded in dirt particles, including parasites 	<ul style="list-style-type: none"> varies in effectiveness depending on application and manufacturer contact your local public health unit for more information
Activated Carbon Contactors	<ul style="list-style-type: none"> remove small amounts of some chemicals used for removing tastes and odours, and reducing trace levels of organic 	<ul style="list-style-type: none"> are not suitable for removing minerals, or larger amounts of chemicals 	<ul style="list-style-type: none"> must be replaced regularly but hard to know when contactors are exhausted can become a dangerous source

	chemicals (like pesticides)		of bacteria and taste and odour problems
Filters	<ul style="list-style-type: none"> • use ceramic candle filters to remove bacteria and parasites, but not viruses • use other filter types to remove sand, sediment, rust and particles • use specially rated filters to remove very small particles 	<ul style="list-style-type: none"> • need chlorination in addition to ceramic candle filters to remove viruses 	<ul style="list-style-type: none"> • need regular maintenance and replacement for proper operation
Greensand Treatment	<ul style="list-style-type: none"> • removes moderate amounts of iron and manganese 	<ul style="list-style-type: none"> • is unsuitable for removing microbes 	<ul style="list-style-type: none"> • is not easy to operate or maintain • needs regular backwash and periodic reactivation with permanganate solution and/or bleach
Reverse Osmosis	<ul style="list-style-type: none"> • removes nitrates, sulphate, hardness, most microbes, dirt particles and small amounts of some pesticides 	<ul style="list-style-type: none"> • can result in plugged membranes because of hard water 	<ul style="list-style-type: none"> • is costly because of need to replace membrane • needs prefiltration and softening of hard water
Softeners	<ul style="list-style-type: none"> • reduce hardness that produces lime deposits on dish-washed items, and gives a starched effect on laundry 	<ul style="list-style-type: none"> • are not suitable for removing microbes or most chemicals • increase sodium concentration in treated water 	<ul style="list-style-type: none"> • need periodic replacement of softener salt and disposal of concentrated salty water

Please note :

Equipment carrying the National Standards Foundation (NSF certified) trademark has been thoroughly checked for performance and the manufacturing facility is inspected annually. There are several NSF standards. Check for the appropriate NSF standard number for your treatment needs. Consult your local [public health unit](#) and reputable expert companies.

Common Well Water Quality Problems

Concern	Cause	Consequences	Options
E.Coli Bacteria Detected	<ul style="list-style-type: none"> • human or animal sewage getting into well 	<ul style="list-style-type: none"> • may result in serious illness – of special concern to visitors, 	<ul style="list-style-type: none"> • use alternate water supply, and • consult your local

		<p>infants, seniors and other frail individuals</p> <ul style="list-style-type: none"> • stop using well water 	<p>public health unit for advice</p>
Coliform Bacteria (Total Coliform > 5 Counts)	<ul style="list-style-type: none"> • surface water getting into well 	<ul style="list-style-type: none"> • early warning of possible illness 	<ul style="list-style-type: none"> • consult your local public health unit for advice • inspect and repair well • shock chlorinate well if necessary, and • retest
Fluoride	<ul style="list-style-type: none"> • naturally occurring mineral in aquifer 	<ul style="list-style-type: none"> • high levels can result in mottling of children's teeth • in severe cases, bone defects can occur 	<ul style="list-style-type: none"> • test for level • avoid fluoride dental treatment and toothpaste, and • distill water for drinking or use bottled water if level is very high
Iron	<ul style="list-style-type: none"> • naturally occurring mineral in aquifer 	<ul style="list-style-type: none"> • yellow or red cloudy water • not hazardous to health • can stain plumbing and laundry • may increase over time and make well water unusable 	<ul style="list-style-type: none"> • use chlorination–filtration • consider greensand treatment, and • distill water
Iron Bacteria	<ul style="list-style-type: none"> • growth of non-harmful bacteria, creating black slime and particles 	<ul style="list-style-type: none"> • well pump failure (overheating), low flow rates • may increase over time 	<ul style="list-style-type: none"> • shock chlorinate
Pesticides	<ul style="list-style-type: none"> • local spraying, spills 	<ul style="list-style-type: none"> • long-term health risk 	<ul style="list-style-type: none"> • stop using well water • use alternate water supply, and • consult local Ministry of the Environment and your local public health unit about treatment options
Fuels (Gasoline, Diesel, Heating Oil)	<ul style="list-style-type: none"> • leaking old storage tank, spills 	<ul style="list-style-type: none"> • long-term health risk 	<ul style="list-style-type: none"> • stop using well water • use alternate water supply, and • consult local Ontario

			Ministry of the Environment and your local public health unit about treatment options
Nitrates	<ul style="list-style-type: none"> • nutrient application and septic systems 	<ul style="list-style-type: none"> • health risk for infants when nitrate is above 10 ppm 	<ul style="list-style-type: none"> • use alternative water supply for drinking and cooking, and • use reverse osmosis or distillation
Hydrogen Sulphide	<ul style="list-style-type: none"> • naturally occurring gas, or harmful bacteria that is releasing sulphate 	<ul style="list-style-type: none"> • not a health hazard 	<ul style="list-style-type: none"> • use chlorination-filtration, and • use greensand treatment
Hardness	<ul style="list-style-type: none"> • naturally occurring minerals in aquifer 	<ul style="list-style-type: none"> • not a health hazard 	<ul style="list-style-type: none"> • add softener, and • use an alternative soap and detergent for moderately hard water

Please note :

- Deep well water quality is not constant and can change over time. Iron and manganese concentrations may increase to unacceptable or untreatable levels. Iron bacteria problems can also become severe enough to force well abandonment.
- Shallow well water quality can change seasonally. Water quality in highly vulnerable wells (less than three metres or 10 feet deep) may change within hours or several days after rainstorms or thaws.

See also :

- [Water Safety During an Electrical Power Blackout](#)
- [Boil Water / Drinking Water Advisory](#)
- [Putting Your Well Water to the Test](#)
- [Get Acquainted with Your Well](#)
- [Pathogens and Your Well Water](#)
- [Disinfection Instruction Sheet](#)
- [Choosing a Water Treatment System](#)

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FOR MORE INFORMATION

Call the ministry **INFOline** at 1-866-532-3161
 (Toll-free in Ontario only)
 TTY 1-800-387-5559
 Hours of operation : 8:30am - 5:00pm

[Ministry of the Environment](#)
 Information Centre : 1-800-565-4923
 Water Well Records : 1-888-396-9355

[Ministry of Agriculture and Food](#)
 OMAF Agricultural Information Contact Centre :
 1-877-424-1300



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