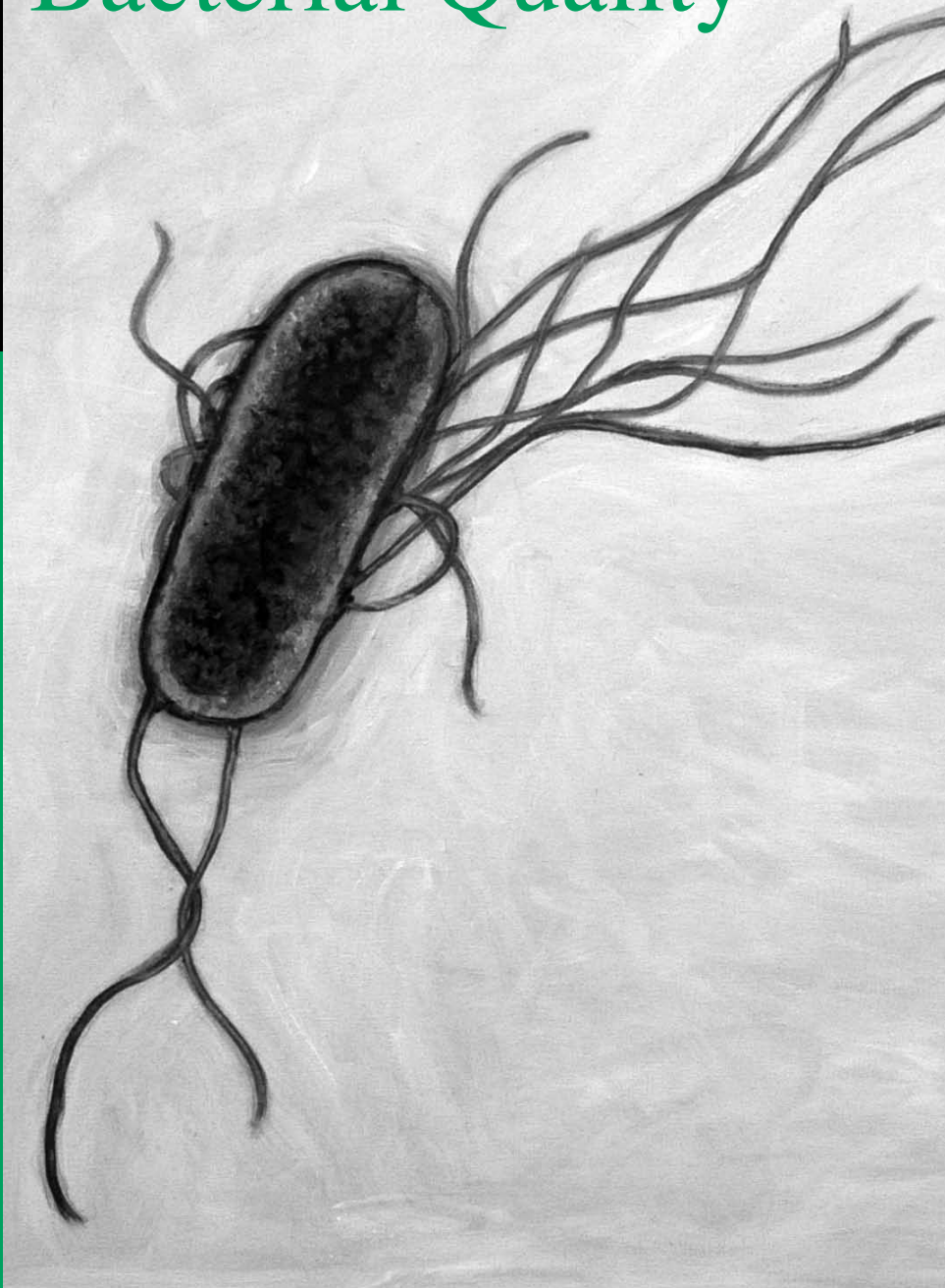
Fixing Bacterial Quality



This booklet series describes what private well owners can do to maintain clean, safe drinking water from their well to protect their health. This is booklet 2 in a series of 6.

Your Well Water series titles:

1 Is It Safe to Drink?
2 Fixing Bacterial Quality
3 Understanding Chemical Quality
4 Water Treatment Options
5 Maintaining Your Water Treatment
6 Real Estate Transactions

2009

If your test results found bacteria to be present, your water is not safe to drink.

Results that indicate the water is safe to drink may come back in a variety of formats:

- absent
- 0 colony forming units per 100 millilitres (0 CFU/100 mL)
- less than 1 colony forming unit per 100 millilitres (<1 CFU/100 mL)
- non-detect (ND)

If a result other than "absent" or a number other than "0 or <1 CFU/100 mL" is provided in the lab report, it means that bacteria are present in the water and your water is not safe to drink. You need to fix the well to address bacterial quality or find another source of drinking water.

Retest your water to confirm the result

Take care when collecting the sample. Follow the instructions that came with the bottle. If they are missing or not clear, see our website for basic procedures <**www.gov.ns.ca/nse/water/docs/MicrobiologicalSamplingProcedure.pdf**>. Be sure to disinfect the faucet with chlorine bleach. Take extra care when handling the bottle and the lid.

Re-test for both *E. coli* and total coliforms. Comparing the results of the two tests can help you uncover the source of the problem.

Boil your water to kill bacteria

Boil your water while waiting for the results or use another source for drinking, preparing infant formulas, preparing juices and ice cubes, washing fruits and vegetables, cooking, and cleaning your teeth.

To kill bacteria, bring water to a rolling boil for one minute.

You do not usually need to boil water for other household purposes. Those who can avoid swallowing the water may shower, bathe, and wash using tap water. Toddlers and infants should be sponge bathed. Dishes and laundry may be washed in tap water, either by hand or by machine.

Use bottled water from a reputable supplier

If you use bottled water, choose a supplier who is a member of the Canadian Bottled Water Association (CBWA) or the International Bottled Water Association (IBWA).

Study the results of the new test

If *E. coli* is present, the water source or the system has been contaminated by fecal waste from humans or other warm-blooded animals. Absent, zero, less than 1, or non-detect is the only safe result for *E. coli* in drinking water.

Animal waste from pets or nearby manure piles may be seeping into your well through surface water. A nearby septic system may be malfunctioning causing sewage to enter your well.

If *E. coli* is absent but total coliforms is present, it could mean one of three things:

- A layer of bacteria may have developed within your well or plumbing system. This layer of bacteria is called a biofilm. If you disinfect your well and plumbing system, you may solve the problem.

- Surface water may be getting into your well. This increases the risk of animal waste contaminating your water sooner or later. To solve this problem, you would need to identify how surface water is entering your well and prevent this from happening. You may need the help of a well specialist.

- Your well water may come from an aquifer that contains bacteria. This can happen when ground water comes from a shallow source. Drilling a deeper well may solve the problem. Compare the cost of drilling a new well to the long-term cost of buying and maintaining a treatment system.

Evaluate your options

Options include disinfecting the well, improving the well construction, or purchasing a treatment system:

- To disinfect your well, see the well disinfection procedures, available on our website at <**www.gov.ns.ca/nse/water/docs/DisinfectWaterWell.pdf**>.

- To improve well construction, seek the advice of a certified well professional. See our website for a list of certified well drillers and diggers at <**www.gov.ns.ca/nse/water**>.

- Some of the technologies available to treat bacteria in water are listed in the table below. Seek specialist advice to determine the system that best suits your needs. Other treatment options may also be available. See *Your Well Water 4 – Treatment Options* for more information about choosing a reputable company.

Treatment Technologies That Remove Bacteria

Treatment Technology	Considerations
Chlorination	• For point-of-entry treatment (treats all your household water).
Distillation	• For point-of-use treatment (treats only the water from the faucet it is installed at). • Produces treated water slowly in batches. Storage may be required. • High total dissolved solids (TDS) or hardness can lead to scaling and decreased efficiency. • Makes water corrosive. • Not recommended if volatile organic compounds (VOCs) are present, as some VOCs may recondense with the treated water and dissolved gases may need to be vented.
Ultraviolet Light (UV)	• High levels of turbidity or colour may limit effectiveness. Remove suspended solids with standard particulate filtration before treating water. • Must be NSF 55 (Class A) certified.

Cover painting of *E. coli* by shardcore.

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This information has been prepared by Nova Scotia Environment.
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