

How to Test Well Water For Bacteria

If you use a private well to supply water to your home, you should test it for bacteria at least once a year. Testing is recommended every spring after the snow melt and spring run-off. You should also test your well if you see any changes in the water (ex: strong colour, odour or a change in taste or clarity) and after a particularly heavy rainfall or flooding.

What the laboratory will test for in the water sample

Private water samples are tested for:

- total coliform (TC) bacteria
- Escherichia coli or E. coli (EC) bacteria

Not all coliform bacteria measured in the total coliform test are harmful. Some coliform bacteria occur naturally in soil and in the intestines of humans and animals. However, there are types of coliform bacteria that can be harmful - neither total coliform nor E. coli bacteria should be found in well water. The presence of coliform bacteria indicates there may be an open pathway for contaminants to enter your well, whereas E. coli is a serious indicator that the well is contaminated.

How to collect a water sample

Currently, there are four accredited testing laboratories in Manitoba that provide bacteriological water analysis (see listing to the right). To test your well water, you must have a special bottle to collect a sample of water from your well. Sample bottles, sampling instructions and the forms to submit water samples are available at each laboratory or you may contact your Rural Municipality office, Conservation District office or local Manitoba Sustainable Development office.

ALS Environmental

12-1329 Niakwa Road E.
Winnipeg, MB R2J 3T4
Phone: 204-255-9720
Toll Free: 1-800-607-7555
Fax: 204-255-9721

Horizon Lab Ltd.

4055 Portage Avenue
Winnipeg, MB R3K 2E8
Phone: 204-488-2035
Fax: 204-488-4772

Central Testing Laboratory Ltd.

Unit 9, 851 Lagimodiere Boulevard
Winnipeg, MB R2J 3K4
Phone: 204-237-9128
Fax: 204-233-0489

Bureau Veritas Canada Inc.

Unit D, 675 Berry Street
Winnipeg, MB R3H 1A7
Phone: 204-772-7276
Fax: 204-772-2386

Prior to collecting a well water sample, you should contact the laboratory and ask:

- if they need advance notice that you're sending a sample
- how to pack and address your sample if you're sending it by bus or courier
- how to pack and label your sample, and if you're dropping off the sample yourself, where their drop off location is and what their hours are
- how the laboratory will notify you if there is a problem with your well water quality
- Collect your water sample early in the week - Monday to Thursday - so it can get to the laboratory to be analyzed within 24 hours.
- Take your sample as close to the well as possible, from a tap, faucet or spigot that is regularly used and easily accessible. Do not sample from a garden hose or from a container such as a water bottle.
- Only collect untreated well water. Do not collect water that's been through a water treatment device (water softener) or any kind of filter (reverse osmosis). You must bypass, move or disconnect the device or filter to collect the sample.
- If you are sampling more than one location, you need a separate sample bottle for each location.

Follow the instructions provided by the laboratory or as listed below to collect your water sample. It is important to follow the directions carefully or your sample may be contaminated.

1. Remove the screen (aerator) from the end of a cold water tap or faucet
2. Sterilize the end of the tap, faucet or spigot. This can be done by flaming the end of the tap with the flame from a lighter or washing it with a strong disinfectant solution made by mixing 10 millilitres (two teaspoons) of unscented, detergent-free household bleach with one litre (four cups) of water. Avoid flaming the end of the tap, faucet or spigot if there are any plastic components as they may become damaged.
3. Allow the tap, faucet or spigot to run with cold water for three to five minutes before taking the sample.
4. Cut the flow of water to a gentle stream to avoid splashing or overfilling the sample bottle.
5. Remove the cap from the sample bottle by carefully breaking the protective seal. Do not use a sample bottle if the seal is broken or if you cannot see the preservative (white residue). Do not rinse the bottle - it contains a preservative needed for the test.
6. Hold the cap in one hand while you fill the bottle. Do not lay the cap down or touch the inside of the cap. Keep fingers below the threaded rim of the bottle to avoid contaminating the sample.
7. Fill the bottle to the level indicated, or as directed by the laboratory. Replace the cap and tighten.
8. Label the bottle and identify the location (ex: kitchen tap - untreated well water) and the date and time the sample was taken.
9. Keep the sample bottle sealed and in a cool place such as a refrigerator.
NOTE: Water samples must be kept cool. Water samples that get too warm, freeze or sit too long will give incorrect results.
10. Fill out the submission form provided by the laboratory. Make sure to indicate where the sample was taken, your address and contact information (include a cell number or email address for emergency notification) on the form.

11. Pack the sample in a cooler with an ice pack and packing paper to keep it cool and secure until it gets to the laboratory. If you're shipping the sample by bus or courier, put the completed sample submission form in a sealable plastic bag, seal it and put it inside the cooler.
12. Drop off the sample and completed form at the laboratory, or at the bus or courier location for transport.
NOTE: Water samples must arrive at the laboratory within 24 hours of collection.

How to interpret the test results

Once the laboratory has completed its analysis of your water sample, the laboratory will issue you a report on the results of the testing. The report will be mailed or emailed to you depending on the reporting method you selected on the sample submission form.

The laboratory analysis report will contain the following information:

- **Test or test description** - This should be consistent with the sample submission form. For bacterial analysis, a separate result should be provided for total coliform (TC) and for *E. coli* (EC) bacteria.
- **Numeric result or count** - A result or count should be provided for total coliform (TC) and *E. coli* (EC). If no bacteria were found in the sample, the result or count will be reported as '0' or '< 1.'
- **Units of measure** - These will be reported for coliform bacteria. The common testing units are 'MPN/100 ml' or 'CFU/100 ml' depending on the type of test that was done. Either measurement method or measurement unit is acceptable.
- **Maximum acceptable concentration (MAC)** - This is the health-based limit set by the Guidelines for Canadian Drinking Water Quality. The MAC for total coliform (TC) and *E. coli* (EC) bacteria in water is '0,' '<1' or 'not detected.'

What happens when my test fails?

If there is an immediate concern about the safety of your water (total coliform >10 and/or *E. coli* present), the laboratory or a drinking water officer will call you and give you directions on water use.

Low total coliform results (1 to 9 total coliform), with no *E. coli* present, pose a very low risk to health and have been associated with sampling or analysis error. As a result, the laboratory is not required to call you.

The laboratory has been instructed to include a boil water fact sheet (See Boil Water Advisory Fact Sheet #2 "For Private Wells".) with all failed test reports (positive for bacteria). The fact sheet provides information on water use.

All water for consumption should be brought to a rolling boil for one minute before using it for drinking, making infant formula or juice, mixing with food, washing fruits or vegetables, brushing teeth or soaking false teeth, or feeding pets. Even if you have a low total coliform result (1 to 9) with no *E. coli* present, it is still a good idea to boil your water until a re-test confirms the water is safe to drink.

You can also use an alternative, safe source of bottled water until your well water is safe to drink.

Confirm failed test results

If your first test failed (tested positive for bacteria), you should take another water sample as soon as possible from the same location to confirm the 'failed' or 'unacceptable' result.

If you are confirming a low TC result, review sampling procedures to ensure the sample is collected correctly. While you're waiting for the results of the second sample, continue to follow boil water precautions or use commercially bottled water.

If the second water sample is reported as 'passed' or 'acceptable,' you can use the water again, but make sure to sample it again in a month to ensure the ongoing safety of your well water.

If the second water sample is reported "failed" or "unacceptable" for bacteria, there are corrective actions that you can take to deal with bacteria in your well.

These actions include:

- checking the condition of the well and making repairs (See Well Water Fact Sheet #1 "How to reduce the Risk of Well Water Contamination")
- disinfecting the well (See Well Water Fact Sheet #3 and #4 - How to Disinfect a Well - Partial Chlorination Method and Full Chlorination Method).

Testing the well after disinfection

Wait one week to test your well water after disinfection. If the test result is free of coliform bacteria (a negative result) you can resume normal use of the water. Do a follow-up test after one month to verify that there isn't any coliform bacteria in the water.

If the well tests positive for bacteria following well disinfection, you should contact the Private Well, Education and Outreach Co-ordinator at the Office of Drinking Water or a licensed well drilling contractor, local plumber or knowledgeable person for advice.

For more information

For more information on drinking water safety, water treatment devices or to receive a copy of other drinking water fact sheets, please visit the Office of Drinking Water website at www.manitoba.ca/drinkingwater or contact the Private Well, Education and Outreach Co-ordinator at 204-948-1351. To locate a local office near you, please refer to the website at http://www.manitoba.ca/sd/pubs/water/drinking_water/odw_contact.pdf.

For information on certification for water treatment devices, visit www.nsf.org.

For information on well driller reports, well construction, well sealing, or for a listing of licensed well drillers, contact Manitoba Sustainable Development, Groundwater Management Section at 204-945-6959.

For health information, contact Health Links/Info Santé at 204-788-8200 in Winnipeg; toll free at 1-888-315-9257 or contact your local public health office. To find your nearest office, go to: www.manitoba.ca/health/publichealth/offices.html.