
ENVIRONMENTAL Fact Sheet



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Coliform Bacteria – An Indicator of Your Well’s Health

Homeowners who use a well for their water supply, including for drinking, showering, and washing dishes, should test their well water often for bacteria (specifically total coliform bacteria and E. Coli). Coliform bacteria testing shows the sanitary condition of your well. Coliform bacteria are commonly found on the ground’s surface and in the top layers of soil and are filtered out as rainwater enters the ground, travels through the soil, sand, gravel and bedrock. If total coliform is present in a water test, it can indicate that your well water may be contaminated, and that there could be a way for disease-causing microorganisms to get into your well. E. Coli is a specific type of coliform bacteria and E. Coli-contaminated water may cause illness unless water is boiled before drinking.

When should you test for bacteria?

Well owners should test their drinking water well:

- At least once per year.
- After a flooding event.
- After there has been work done on the well.
- For a seasonal residence when it is opened in the spring.

Step 1: Test your water for coliform bacteria and E. Coli

Contact an accredited laboratory to acquire test bottles — a list of labs is available in the NHDES [Water Testing Guidance for New Hampshire Private Well Users](#). Follow the directions carefully when collecting your water sample. Bacteria samples **must** be stored on ice and processed by the laboratory within 30 hours of sample collection. Sometimes bacteria tests from the same water supply, under the same conditions, are not consistent and need to be resampled. Reasons for such inconsistencies may be:

- *Sampling Error* – Improper bacteria sampling is the most common reason for false positive results. A video by Ottawa Public Health shows proper sampling procedure: [Step by Step: How to Sample Your Private Well Water for Bacteria](#).
- *Varying Sampling Conditions* – Bacteria naturally occur in clumps and are not evenly distributed in the water, therefore samples collected within close physical proximity or right after one another can show different results.

- *Unsanitary Sampling Tap* – Samples can be contaminated by any particulate or unsanitary conditions at the sampling sink or tap itself. Always clean the tap and flush thoroughly before collecting a bacteria sample to ensure you are collecting a representative sample.

If you take a water sample and it shows the presence of total coliform and you think there may have been a sampling error, take another sample and use care in following the correct sampling procedure.

Step 2: What to do if you have total coliform and/or E. Coli present

Boil the water for at least a minute before using for drinking or cooking

E. Coli is a type of fecal coliform bacterium that poses an immediate health risk. Total coliform bacteria are not a health risk alone, but their presence can indicate that there could be harmful microorganisms in the water. If you cannot boil the water, use an alternative water source until the problem is fixed.

Search for the source of the bacterial contamination

Three common causes of bacterial contamination in well water include:

1) Well pump replacement, plumbing repairs or water treatment maintenance.

These activities are often a source of bacterial contamination in wells. Licensed pump installers and water well contractors are required to properly flush and disinfect the well after any work is completed. Work on home plumbing (hot water tank replacement, treatment installations, leak repairs, etc.) will also introduce bacteria. Licensed contractors are required to spot chlorinate and flush after any installations or repairs. If any of this type of work was done on your well or water system, and you're not sure if it was disinfected, contact the professional you hired to ask if this was done. A disinfection procedure may be all you need to eliminate the bacteria.

2) Well construction and maintenance issues.

There are several features of a well that can make it more likely to have bacteria. Older wells constructed before the 1980s present a higher risk of bacterial contamination because there were no regulations on well construction before that time. Newer wells are required to be installed using methods to prevent bacteria entry. Dug wells are shallow and are more likely to have bacteria present. Dug wells with leaking walls and boards for a cover are especially vulnerable. Spring water often contains coliform bacteria, because spring water flows to the land surface and does not get filtered by the rock and soil.

3) Activities near the well.

Coliform bacteria are abundant at the ground surface and the first few feet of soil, so it's not possible to eliminate them. But certain land uses should be separated from your well such as septic systems and domestic animals. See the NHDES fact sheet [DWGB 21-1: Site Selection for Private Drinking Water Wells](#). Sometimes these setbacks are not met because the well and/or septic were installed prior to regulations, or the setbacks were waived because they could not be met when the property was developed. Do what you can to protect your own well, such as not allowing domestic and agricultural animals near the wellhead and pumping and maintaining your septic system. Proper well construction and maintenance, combined with restricting land

uses near the well are the best ways to protect against bacteria. It is not possible to restrict the land uses of neighbors and abutters, so proper well construction and maintenance are very important.

Perform a wellhead inspection

Inspect your wellhead to determine if there's a pathway for bacteria or hire a well contractor to inspect. Look for the following:

- Wellheads should extend aboveground at least one foot. The ground surface around the wellhead should be raised above a flat grade level so that rainwater and snow melt run away from it and there is no water pooling around the wellhead. There should not be any trees or shrubbery around it, which might attract animals to the well.



A properly sealed wellhead

- Wellheads should be sealed to prevent the entry of stormwater and animals including insects. There should be a well cap with a gasket and bolts sealed tightly. There should be no cracks or holes in the well casing or cap, including for electrical wires, which should be sealed within a plastic or metal conduit. If there is a vent, it should be screened to keep out animals and bugs. Dug wells should have a concrete cover several feet in diameter—it should overhang the well casing and be sealed. See NHDES fact sheet for proper dug well construction: [DWGB-1-4 Dug Well Design \(Wells Constructed by Excavation\)](#).

- You may be able to make improvements to your wellhead yourself, or you can hire a licensed contractor. If you are using a hand dug well or your well is in a pit, you likely need to contact a licensed water well contractor to investigate the option of improving your well or install a new well according to modern well construction standards. You can find a licensed contractor or installer using the search tool for [Water Well Contractors and Pump Installers](#) featured on the [Water Well Board](#) webpage.

Disinfect the well

If you've determined the bacteria in the water was due to a temporary condition such as well repairs or a flooding event, disinfect the well to eliminate the bacteria in the system. If you've done a well inspection and found pathways of bacteria entry, make improvements to the well to block the pathway of bacteria

first. There is no point in disinfecting the well until the pathway of bacteria entry is eliminated because the bacteria would just come back after the disinfection.

You can hire a licensed well contractor to disinfect the well or disinfect it yourself. NHDES has a guide to disinfecting your well: [DWGB-4-11 Disinfecting a Drinking Water Well](#). Vermont Rural Water Association has a video on well disinfection: [How to Shock Chlorinate a Well](#).

After disinfection is complete and the chlorine is completely flushed out of the system, retest the water for bacteria. Before testing, however, make sure there is no more chlorine left in the well water by smelling or using chlorine indicator strips to check for remaining chlorine. If there is still chlorine in the water, it is still actively killing bacteria and must be flushed first before resampling.

After you submit your bacteria sample to the lab, wait for results. If your bacteria re-test comes back absent, the bacteria have been removed by the disinfection. Re-test for coliform bacteria every month or so for a few months, and if bacteria do not come back, you've likely eliminated the pathway for bacteria entry. You can resume drinking the water without boiling first. Continue to sample for coliform bacteria once per year, inspect your wellhead regularly, and continue to protect the area surrounding the well.

Step 3: What if coliform bacteria keep returning?

If coliform bacteria keep returning after multiple disinfections and/or any improvements made to your well by a licensed well contractor, you may need to install a new well. It may be that well upgrades are not sufficient, particularly if you have a hand dug well, a well installed prior to the 1980s, and/or if your well is installed in a pit. If you have not already done so, contact a licensed contractor or installer to evaluate your options. You can find a licensed contractor or installer using the search tool for [Water Well Contractors and Pump Installers](#) featured on the [Water Well Board](#) webpage.

If it's not possible to install a new well, and only total coliform bacteria are present (not E. Coli) you could install a whole house ultraviolet (UV) disinfection system to kill any bacteria as they enters the home. If E. Coli is present and cannot be eliminated, a new well is usually needed.

There are programs available to assist low-income households with financing a new well. Private well financial assistance programs include [RCAP Solutions](#), [USDA Rural Development](#), [Water Well Trust](#) and [Water Well Wish](#).

For additional information

For more information about bacteria and other well water contaminants, see the [NHDES private well webpage](#) or contact the Drinking Water and Groundwater Bureau at [\(603\) 271-2513](#).