



Drilled Well Safety & the Well Disinfection Process

How do I know if my well is contaminated?

Often, well water will have an off taste or odour and may exhibit some colouration. This could be a result of the mineral content which is absorbed from the soils and materials around your well. Although the mineral content may have these unpleasant characteristics, it does not necessarily indicate unsafe water.

The only sure way to determine if the water is bacteriologically safe for human consumption is to have it tested by a certified laboratory. Each well should be tested at least four times a year (once per season) and during snowmelt or heavy rainfall to ensure the safety of the water. The Northwestern Health Unit offers a weekly private water sampling program for a nominal fee. Please inquire at your local Northwestern Health Unit office for more information.

When is a water sample considered adverse?

A water sample is considered adverse if it indicates a Total Coliform count greater than 5 coliform units (CFU's) per 100 mL or one or more E.coli CFU's per 100 mL. Total coliforms are a result of the natural decay of vegetation and organics and are used as an indicator organism, while E.coli is an indicator of direct fecal contamination from a human origin or other warm blooded animal source. Any bacterial levels above these limits should be considered adverse and unfit for human consumption.

Bacteriologically contaminated water should be boiled for at least 1 minute (rolling boil) or treated in some other way (as directed by your local Public Health Inspector) before it is considered safe for human consumption.

What actions should I take if my well water is bacteriologically contaminated?

The first step in determining corrective action for your well is to determine the type of well you are dealing with. A dug well (less than 6 meters or 20 feet) may be directly influenced by surface water run-off and may require additional treatment to make it safe for human

consumption. If you determine that your well is a dug well, please refer to the fact sheet "Dug Wells –What You Need to Know" for more information.

The next step in correcting the problem is to try to determine how the water became contaminated in the first place.

How do I determine the source of contamination?

A properly constructed well of sufficient depth should be capable of naturally filtering out any bacteria, viruses or parasites. Filtering takes place as the surface water seeps through the soil to the water table below. Relatively shallow drilled wells in soil with a larger grain size may not be capable of this filtering action. If a well sample has been determined to be adverse, the first step in fixing the problem should be to examine the well casing to ensure that the well cap is securely fastened, sealed and is at least a foot above grade with no obvious cracks or fissures in the well casing.

Ensure that there are no obvious sources of contamination around the well. Any manure piles, composting, privies, on-site sewage disposal beds or any other possible sources of contamination should be at least 15 meters or 50 feet from the drilled well head and 30 meters or 100 feet for a dug well. More clearance distance must be given when the potential contaminate is uphill from the wellhead.

If there are no obvious sources of contamination, how do I proceed?

The next step in the process would be to disinfect your well by performing a shock chlorination procedure. The general procedure is the same for all types of wells, however, the dose of household bleach required to ensure complete disinfection will vary depending on the diameter and the depth of water in the well. Please refer to the Table 2 and/or the section on the following page for determining the proper dose of chlorine required or the depth of water in the well. Table 1 outlines the steps in a shock chlorination procedure.



Table 1: Shock Chlorination Procedure

<ol style="list-style-type: none"> 1. Typical drilled wells have a 6 inch diameter well casing. For these types of wells, add approximately 60 ml of 5% unscented household bleach (JAVEX®) for every 3 meters (10 feet) of water in the well. Add this bleach directly into the well casing by removing the well cap. Note: Do not add this amount for every 3 meters (10 feet) of well depth. Only add this amount for every 3 meters (10 feet) of water in the well. 2. Flush the sides of the well casing with a garden hose to ensure that all the bleach has reached the water table below. 3. Run the hose until you can smell the characteristic chlorine smell from the end of the hose. Note: If you do not have a hose, run a tap indoors until you can smell the chlorine. 4. Run each tap individually until you can smell the chlorinated water. Turn the tap off after the chlorine smell is detected. Note: You must disconnect any carbon activated filter units prior to filling your distribution system with the chlorinated solution. 5. Drain and fill your hot water heater with the chlorinated solution. 	<ol style="list-style-type: none"> 6. Leave the chlorinated water in the pipes for a minimum of twelve (12) hours to ensure adequate contact time to achieve complete disinfection. Do not use the water for consumption during this time. Note: You may want to perform this procedure overnight to allow for the proper contact time. 7. After the twelve-hour time period is up, run the garden hose, away from your septic field until the chlorine odour is no longer detectable. Note: Chlorine entering your septic field will harm the beneficial bacteria that help to treat your sewage. 8. Run each tap in the house until the chlorine smell is no longer detectable. Note: The amount of chlorine in the pipes would not adversely effect the septic system. 9. Wait two to three (2-3) days, and then resample your well to ensure that the shock chlorination procedure was successful. Note: Continue to boil your water until bacteriological testing ensures the success of the shock chlorination procedure.
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Table 2: Volume of Bleach Required

Volume of 5% household bleach (JAVEX®) for every 3 meters (10 ft.) of water in the well			
Casing Diameter		Bleach Volume	
mm	inches	mL	Fl. Oz.
50	2	6	.2
100	4	30	1
150	6	60	2
200	8	100	3.5
250	10	200	6
300	12	250	8
400	16	400	13
500	20	650	22
600	24	900	30
900	36	2000	68
1200	48	3600	120

How do I know the depth of water that is in my well?

Upon completion of a well, the well driller is required to submit a well driller’s log to the owner and to the Ministry of the Environment. This log will have the total depth of the well and also the depth of the well’s water level. The difference between these two numbers will be the depth of water in the well.

If you are not the initial owner of the property or if another person was the owner at the time of drilling and you do not have a well driller’s log, consult the Ministry of the Environment. They should have a copy of this log in their files.

What if the sample taken after the three day period is still bacteriologically contaminated?

If the well is still bacteriologically contaminated after performing the shock chlorination procedure, review the steps above to ensure that all steps were carried out as indicated by this fact sheet. If all steps were carried out properly, ensure that all sampling steps were followed when performing the water sampling. It could be the result of a sampling error.

If there were not any errors in the shock chlorination procedure and/or the sampling procedure, at this point, it would be important to perform the shock chlorination procedure again and resample as before. If the well is still bacteriologically contaminated after the second shock chlorination, it is likely that the groundwater table that your well draws from is contaminated and some other form of treatment would be required to ensure this water is safe for human consumption.

*** For more information, contact your local *Northwestern Health Unit* office**

