

Common Reasons for Microbes in Your Well Water

Microbes are organisms (like bacteria and viruses) that are too small to see without a microscope.

Pathogens are harmful microbes that can make you sick.

Contaminants are things that can get into your water and make it unsafe to use (they contaminate the water). Contaminants could be chemicals, microbes, or objects.

What's the problem?	What does it mean?	How long will it last?	How do I fix it?	Will shock chlorination help?
Microbes in the aquifer (where the well gets its water)				
Aquifer is naturally at risk of being contaminated by pathogens from the surface.	The aquifer may be shallow or easily affected by surface water.	This problem likely won't go away.	Use a water treatment system. This is the only permanent fix.	Yes, but only in the short term.
Well is not working properly (defective), or it's abandoned.	Defective wells may let contaminants into the aquifer.	If the well is easy to fix, it could be a short-term problem.	<ul style="list-style-type: none"> • Fix the well. • Plug the well (decommission it). 	Yes, if the water is unsafe due to microbes.
Problems with the well's construction				
Well head is broken.	A cracked or broken well head will let contaminants into the well.	If the well head is fixed, it could be a short-term problem.	Replace or repair the well head or surface casing.	Yes, if the water is unsafe due to microbes.
Well cap is missing, loose, or not secured.	Well caps stop contaminants from getting in to the well.	If the well cap is fixed, it could be short-term problem.	Replace or repair the well cap.	Yes, if the water is unsafe due to microbes.
Well casing is rusted, damaged, or cracked.	The well casing stops contaminants from getting in to the well	It could be a long-term problem. It's very hard and often impossible to repair a well casing.	<ul style="list-style-type: none"> • Have a licensed well-water driller try to repair the casing. • Replace the well casing. • Drill a new well. 	Yes, but only if the casing is repaired and the water is unsafe due to microbes.
Well seal is old, cracked, or missing.	The well casing isn't sealed between the casing and the confining layer.	It could be a long-term problem. It's very hard and often impossible to repair a well seal.	<ul style="list-style-type: none"> • Have a licensed well-water driller try to repair the well seal. • Drill a new well. 	Yes, but only if the well seal is repaired and the water is unsafe due to microbes.



The well is a pit well.	Pit wells are below the ground (grade). Surface water can easily contaminate them.	It could be a short-term problem if the well head is raised above grade.	Have licensed well-water driller try to raise the well head above grade or make other improvements.	Yes, but only in the short term.
Problems with how the well is working (operational)				
Contaminants are in the well's distribution system (lines, valves, pumps, treatment equipment).	Leaks, breaks, loss of pressure, repairs, or replacing equipment can let contaminants into the system.	It could be a short-term problem if you fix the system.	Shock chlorinate and flush the whole system.	Yes, it should help fix the problem if the contamination is from microbes.
The water treatment system isn't maintained.	Water filters and treatment units can collect contaminants over time.	It could be a short-term problem if you make repairs and maintain the system.	Always keep the treatment equipment properly maintained.	Yes, it can help disinfect the system after you fix the problem. But it doesn't replace good maintenance.
Emergencies				
Flooding	Floodwaters get into the system or aquifer, usually from the well head	It's usually a short-term problem if flooding is rare.	Shock chlorinate.	Yes, but it may not work for 2 weeks after flooding (depending on the amount of microbes in the aquifer).
Vandalism	Microbes could get into the well if it gets damaged.	It could be a short-term problem (depending on the damage).	Fix the damage and shock chlorinate if you need to.	Yes, if the water is unsafe due to microbes.
Sampling error				
Microbes got into the water sample when it was collected.	Follow the instructions carefully. Dirty taps, screens, faucets, hoses, and hands can let microbes into the sample.	It's a short-term problem.	Take another sample and follow the instructions carefully.	No. Take another sample.

Contact a public health inspector, water-treatment company, or licensed well-water driller if you have questions about your drinking water system.

Last revised: August 26, 2021

Author: Environmental Public Health, Alberta Health Services