

Common Reasons for Failed Bacteriological Results in a Groundwater Supply

Contamination Source*	Description and Contributing Factors	How long contaminated?	Corrective action needed before shock chlorination	Will shock chlorination work over time?
Aquifer Contamination				
Aquifer naturally susceptible to surface contamination	Aquifer may be shallow or connected to surface water. Perforations or screen completed in shallow aquifer.	Likely continual/permanent risk. May be hard to assess.	Begin effective continuous treatment.	Continuous disinfection replaces the short-term shock chlorination.
Abandoned well that allows contaminants to enter the aquifer.	An abandoned well that's defective may allow contaminants to enter the aquifer. The effect will directly relate to the nature of defect, how close to the active well, and the source of contamination.	Temporary risk if fixed. May be hard to assess if well buried or unknown.	Decommission (plug) abandoned well.	Yes
Defects in Construction				
Broken well head	Cracked/broken upper casing allows contaminants to enter.	Temporary risk if fixed.	Replace/repair well head/surface casing.	Yes, once corrected.
Well cap missing, loose, not secure	Cap might be missing, loose, not secured.	Temporary risk if fixed.	Replace/repair well cap	Yes, once corrected.
Well casing is corroded allowing surface contamination into supply	Casing breached. May be hard to verify. Sediment may mean the casing has been breached.	Likely permanent risk. Hard to assess by homeowner.	Contact licensed water well driller for repair advice.	Likely not, unless defect is identified and corrected.
Poor completion of surface casing	Surface casing not sealed to confining layer. May be hard to verify.	Likely permanent risk. Hard to assess by homeowner.	Contact licensed water well driller for repair advice.	Likely not, unless defect is identified and corrected.
Pit well	Pit wells are prone to contamination via surface water and shallow groundwater flooding or collection.	Likely permanent risk until fixed.	Contact licensed water well driller for repair advice.	Likely not, until repaired.
Operational Contamination				
Contaminated water distribution system (lines, valves, pumps, etc.)	Replacing parts (pumps), water lines, new well construction can introduce contamination to the system.	Temporary risk until fixed.	Shock chlorinate and flush entire system.	Likely to work.
Water treatment equipment contamination and/or maintenance (e.g., carbon filters, cartridge filters).	Water filters can trap material and bacteria, creating conditions that allow the bacteria to multiply and proliferate.	Temporary risk if proper preventative done.	Follow manufacturer's instructions on frequency of equipment maintenance (cleaning, replacement, etc.)	No. Shock chlorination doesn't replace proper and regular maintenance of the treatment equipment.
Contaminated water lines	May be caused by loss of pressure due to power failure, broken water lines, etc.	Depends on likelihood it will happen again.	Identify the cause and address if needed.	Likely, but used to clean water lines.
Emergency Event				
Flooding	Where water from floodwaters flows overtop the wellhead and enters the well and aquifer.	Temporary risk.	Make sure to use for 2 weeks (turnover) before shock chlorination.	Likely to work.
Vandalism	Contamination conditions created by vandals.	Likely temporary.	Address condition.	Likely to work.
Sampling Error				
Sample was contaminated during collection	Sampling from taps that have screens, visibly dirty faucets, garden hoses, outside tapes, faucets with POU filters may contaminate samples. Contaminating the bottle or cap of the bottle during sampling. Not following the sampling procedure as per ProvLab's instructions.	Resample using the correct procedure to avoid sampling error.	Does not apply.	Does not apply.

*Contact your local public health inspector if you have questions.