



Humboldt County Department of Health and Human Services

DIVISION OF ENVIRONMENTAL HEALTH

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INTERPRETATION OF WATER SAMPLE TEST RESULTS

Testing water for the presence of coliform bacteria is the most common method of determining the bacteriological quality of drinking water. Properly collected water samples, analyzed by a certified laboratory, provide information essential to the maintenance of a safe drinking water supply. The following information may be useful for interpreting water sample results and inspection of the water system.

The group "coliform bacteria" is a diverse group of bacteria, which are present in decaying organic matter, topsoil, surface waters, and human or animal feces. While these bacteria are generally not harmful themselves, their presence in a water supply is used as an indicator of contamination. Presence of coliform bacteria in a well indicates that unfiltered or poorly filtered surface water has found its way into the groundwater or entered through an opening in the well casing.

When coliforms are present as a result of septic/fecal contamination, their numbers are usually high and fecal coliform (*Escherichia coli*) is also usually present. *E. coli* bacteria are found only in the digestive systems of humans and animals. Their presence in your well water is usually the result of contamination by manure or human sewage from a source such as a septic system or confined animal enclosure.

Water that is positive for coliform bacteria and especially for *E. coli* should not be consumed until the problem is resolved. This should start with disinfection of the well followed by a retest to confirm that the disinfection was effective. After disinfection has been proven successful, we recommend an additional test in 2 to 4 weeks to make sure that gradual recontamination is not occurring. If disinfection is not successful, a thorough inspection of the well and storage tank should be made and any obvious problems should be corrected. When contamination is present, either boil water for 5 minutes before using, or use bottled water until such time that the water system has been evaluated and improvements have been made to provide safe drinking water at all times.

IF YOUR DRINKING WATER IS FROM A SURFACE WATER SOURCE (river, stream, spring, etc.) IT SHOULD BE FILTERED AND DISINFECTED BEFORE DRINKING.

Total Coliform	Fecal Coliform (<i>E. coli</i>)	What it Means
<1	0	Safe for drinking. Maintain regular testing
1 – 5	0	Safety is doubtful on the basis of a single test. Safe for drinking only if testing of three samples collected one to three weeks apart shows no higher result and the condition is judged stable, and the well is protected and located at least 100 feet away from any source of human or animal waste.
6 to 80	0	Unsafe for drinking. Contamination is not likely to be of sewage origin unless it is far removed from the water source or unless there has been a delay in receipt of the sample. Common in new wells before disinfection and shallow dug wells that are not properly sealed, or surface water sources.
Above 80	Above 1	Unsafe for drinking. This water is contaminated and should not be used for drinking or any domestic purpose.

****Caution:** Young and immunocompromised individuals are at greater risk than the general public.

(over)

HOW WELLS BECOME CONTAMINATED

Wells of insufficient depth or substandard construction are more susceptible to bacteriological contamination. This is particularly true of “dug wells” that are walled up with boards, brick, stone or tile sections. These linings let unfiltered surface water and near-surface water seep in through cracks. Properly constructed wells (drilled wells) are usually free from bacteriological contamination because they seal off near-surface and surface waters from the well. However, if drilled wells are contaminated, one of the following reasons is likely the cause:

- Lack of or inadequate annular seal around well casing causing surface water intrusion.
- The casing is not terminated far enough above the ground.
- Well is too close to sources of contamination (sewage disposal system, corrals, etc.).
- Well head is subject to flooding, or slab does not drain away from casing, or is missing.
- Inadequate sanitary seal at well head.
- Cross connections in plumbing system.
- In old wells, the casing may have rusted through, leaving holes near the ground surface through which polluted surface water can enter.
- New wells often show contamination because the drill hole becomes contaminated through dirty tools, pipe and drilling water.
- New piping, pump or pressure system components may also contaminate a well if they are dirty and not disinfected prior to use, assembly or installation. Therefore, new wells, pumping equipment and water systems should be disinfected prior to use. The state code requires such disinfection.
- Storage tank in poor condition, or allows intrusion of water, dirt, insects, animals, etc.

IN ADDITION TO WATER ANALYSES, A COMPLETE EVALUATION OF THE WATER SYSTEM BY A QUALIFIED INDIVIDUAL MAY BE NECESSARY TO FIND POTENTIAL PROBLEMS & SOLUTIONS.

WELL DISINFECTION PROCEDURES

To disinfect a water system, we recommend that you take the following steps:

1. Estimate the total amount of water in the system. Include the water volume in the well casing, storage tank, and all water piping.
2. Add bleach to the well at the ratio of one quart for every 500 gallons of water in the system. (Note, for systems with storage tanks, part of the chlorine may be added to the storage tank.)
3. Open faucets and valves throughout the system, and run the water until the odor of chlorine can be detected. This will ensure that the chlorinated water has entered all piping in the system.
4. Leave the water off for 12 to 24 hours to allow time for the chlorine to disinfect.
5. After ample contact time, flush the system by opening exterior faucets. This flushing should be done outside to avoid putting too much chlorine into the septic system. Do not allow discharge of this chlorinated water to surface water such as streams, rivers, ponds or lakes.
6. Retest your water system after 10 days to determine whether the disinfection was effective or whether contamination still exists. Positive results may suggest that contamination is originating from an underground source or that the well may have one or more of the problems listed above.

Please call the Division of Environmental Health if you have additional water quality questions.