



HOUSING & ENVIRONMENT

THE UNIVERSITY OF GEORGIA
COOPERATIVE EXTENSION SERVICE
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YOUR HOUSEHOLD WATER QUALITY: COLIFORM BACTERIA IN YOUR WATER

WHAT ARE COLIFORM?

Coliform are a group of several types of bacteria from the same family which typically live and reproduce in the intestines of animals. Coliform bacteria can also be found in soil, surface water, and plants--anywhere animal feces may be present.

WHAT IS *E. COLI*?

E. coli is an abbreviation for *Escherichia coli*, a genus and species of bacteria. *E. coli* is a member of the coliform group and is the predominant bacteria in the gut of warm-blooded animals. The fact that it originates only in warm-blooded animals makes *E. coli* a better indicator than coliform of the potential for human diseases. A water test will give you results for both *E. coli* and total coliform. The presence of *E. coli* in water indicates direct contamination with fecal matter and therefore, the presence of disease-causing microorganism.

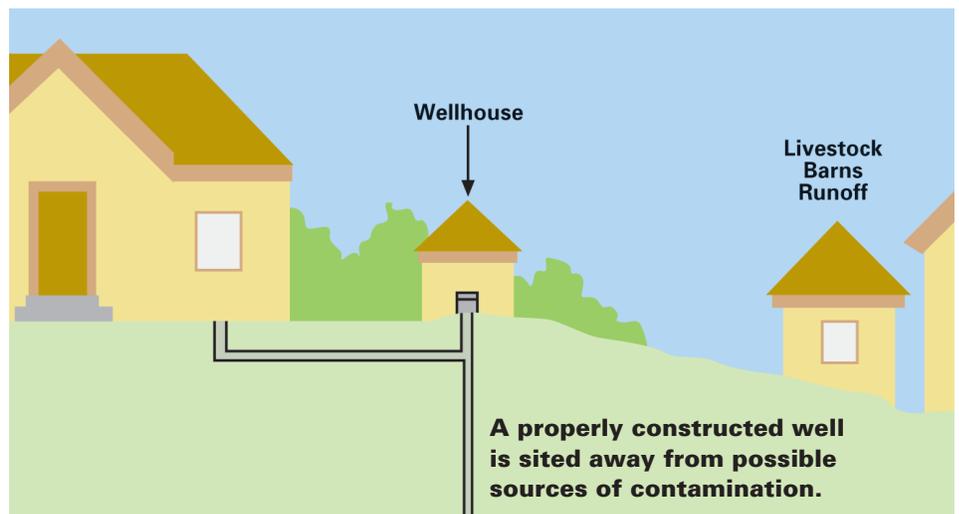
WHICH DISEASES CAN BE FOUND IN WATER WHEN *E. COLI* IS PRESENT?

Disease-causing microorganisms are known as "pathogens" and include:

- bacteria that cause cholera and typhoid-fever
- protozoa that cause dysentery
- viruses that cause polio and hepatitis
- helminths such as roundworm and tapeworm

WHY WASN'T MY WATER TESTED FOR ALL MICROORGANISMS THAT CAUSE DISEASES?

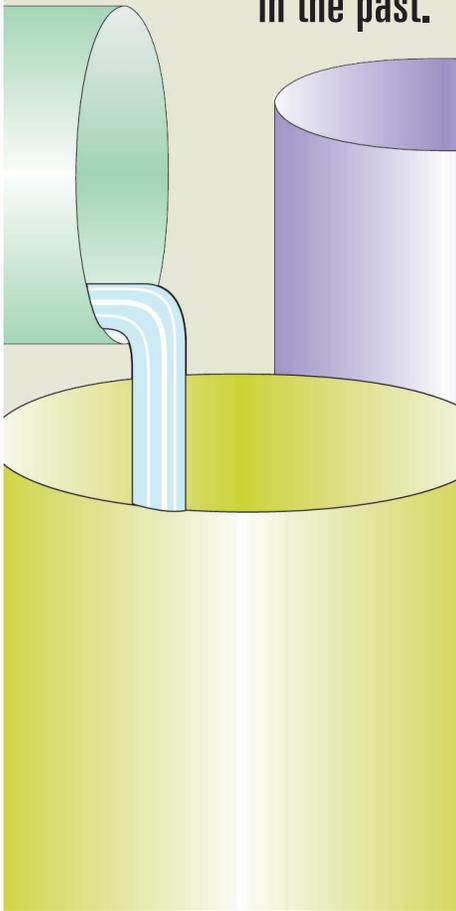
There are numerous water-borne diseases, each requiring a different method of detection; therefore, it is impractical to look for all the possible disease-causing microbes in water. Testing for Coliform is a good alternative to looking for all the disease-causing microbes. When coliform are found in groundwater, this indicates that the groundwater is being affected by surface water or surface activities. Because coliform originate on the land surface, it is used as a tracer for disease-causing bacteria. Since *E. coli* must originate in the gut of a warm blooded animal, its presence indicates contamination



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Remember, it's a good idea to test your well for bacteria once a year even if you have not had bacteria-related problems in the past.



from animal feces and the high likelihood of disease-causing organisms being present as well. Since testing for a specific disease-causing organism is impractical, testing for total coliform and *E. coli* are considered the best way to determine whether or not a water supply is protected from microbial contamination.

HOW DO I INTERPRET MY TEST RESULTS?

Water containing any total coliform or *E. coli* should not be used for drinking or cooking unless boiled for 5 minutes or otherwise disinfected. The presence of *E. coli* indicates that the water has been contaminated with feces and the risk of contracting an infectious disease is much greater than when only total coliform are present.

WHAT CAN CAUSE A WELL TO TEST POSITIVE FOR THESE BACTERIA?

Bacteria in wells usually comes from surface water that enters the well without first percolating through the soil and porous material above the water table. Your well can be contaminated if the well was improperly constructed or if the well is located in a depression that collects surface runoff. Contamination can also occur during floods when flood water overtops the well casing. Newly drilled or serviced wells will also contain these bacteria due to material entering the well from the surface.

Shallow wells, less than 60 feet deep, are much more susceptible to contamination from bacteria than are deeper wells. Shallow groundwater may not be sufficiently filtered by the soil and porous material above the water table to remove surface bacteria. Shallow groundwater can also be influenced by the on-site disposal of wastewater. If a septic system is too close to the well or not working properly, this can be the bacteria source.

Other causes for contamination include:

- **Open wells**, which can allow animals such as rodents to fall into the well. Even the smallest opening will allow insects to travel in and out.
- **Backflow** from outside hoses, caused by negative pressure in the plumbing, can bring dirty water back into the well. Faulty check valves also contribute to this problem.
- **Unsanitary Plumbing**, which can be a problem even when wells are well-constructed and properly located. Groundwater does not contain a small amount of chlorine (as do most municipal water supplies) that serves to prevent bacterial growth within the plumbing. Forgetting to regularly service water treatment filters can also allow bacteria to accumulate and grow.

WHAT SHOULD BE DONE TO CORRECT WELL CONTAMINATION?

The well can be disinfected by a process known as shock chlorination, **but unless the cause of contamination is discovered and corrected, the bacteria problem will return.** Refer to the publication "Protecting Your Well and Wellhead" for assistance in locating the problem and to "Disinfecting Your Well Water: Shock Chlorination," for performing this task. For more information, contact your local county extension office.

Test your water again after all traces of the shock chlorination treatment are gone. If the bacteria are still present after repeating this treatment, your well may have an unseen problem, or the groundwater itself may be the source of the bacteria. You can still use this water for your household by installing a continuous disinfection system such as a chlorinator, ultraviolet light, or ozone system. Contact your local water treatment professional to discuss these options and cost.

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