

Livingston County Health Department

Well Sampling for Coliform and Nitrate

BACTERIA IN WATER

Bacteria and parasites that cause illness can enter a well in many ways. Whether the contamination comes from the materials and tools used in the well's construction, from septic failures near the well or from feedlot runoff, the bacteria and parasites must be destroyed to ensure safe water.

Every new, modified or reconstructed water well, including pumps and all pumping equipment should be disinfected before being used and again each time it is opened for maintenance or repair. The well and pump contractor is responsible for disinfecting the well after construction and pump installation is completed. Water from a system that has been completely disinfected should be free of potentially harmful bacteria.

TESTING FOR COLIFORM

The Illinois Department of Public Health recommends that all new wells and those that have been repaired be tested to assure the water supply is safe. Bottles for testing water are available from local health departments. Where a local health department does not exist, contact the Department's nearest regional office (see list on back)

Testing for coliform bacteria will reveal whether your water supply may be contaminated with infectious organisms, but it will not provide a direct measure of pathogenic, or disease-causing, bacteria. Specific disease-producing organisms present in the water are not easily identified, and testing for these organisms in the laboratory is complex and time-consuming. Coliform bacteria, on the other hand, can be easily identified in the laboratory and are used as an indicator of the bacteriological quality of water.

Some members of the coliform indicator group occur naturally in the intestines of humans as well as other warm-blooded animals and are discharged in great numbers in human and animal waste. Others occur naturally in surface water of varying quality and in topsoil. A positive analysis for coliform bacteria indicates that the well sample may have been contaminated by surface water or fecal material. This may suggest that the water well may not be properly constructed to protect it from sources of bacteriological contamination. Negative results indicate there was no contamination at the time of sampling.

NITRATES

A new water supply should be tested for nitrates. Levels above 10 milligrams per liter (mg/l) as nitrogen may cause illness in infants 6 months of age or younger. Nitrates found in ground water are usually produced by agricultural fertilizers, livestock wastes or septic systems.

SAMPLE COLLECTION

All bacteriological water sample bottles are sterilized prior to distribution. Handle them carefully to avoid introducing contaminants during the sampling process itself and be sure to follow closely the instructions included with the bottle. Select a sampling point as close as possible to the water supply source. Do not collect from garden hoses, dirty faucets or swing-type faucets where foreign material may contaminate the sample. Remove faucet screens or aerators prior to sampling.

Before collecting the sample, open the tap and allow the water to run full flow until the pump starts and runs for several minutes. This allows the sample to be drawn directly from the ground water supply, rather than water that has been in storage for a period of time. Before collecting the sample, adjust the flow of water to a stream approximately the size of a pencil.

Remove the cap from the sterile bottle and take the sample immediately. Do not rinse the bottle or touch the rim of the bottle or the inside of the cap with your fingers or with the spout of the sampling point. Fill the bottle to the fill line, leaving an air space, and immediately replace the cap.

Complete the report form that was enclosed with the bottle. It is particularly important that the date of collection, sampling point, and return address be completed accurately. After completing the report form, place it in the box with the water sample bottle. Attach the mailing label and the required postage and mail the water sample as soon as possible. (Samples received more than 30 hours after being collected are too old for testing and will be disregarded.) Samples should reach the laboratory no later than Thursday of any week.

WATER SAMPLE RESULTS

Water sample testing results are sent to the Livingston County Health Department for interpretation and mailing to homeowners.

If a sample is positive for coliform bacteria, the following procedures are recommended;

- The well should be re-sampled immediately to see if further testing shows the presence of coliforms. This will help to eliminate the possibility of contamination of the sample itself due to improper collection techniques, contaminated sample bottle or the incidental contamination of the pump or plumbing fittings.
- If the resample is not satisfactory, the Livingston County Health Department should be consulted. The well should be inspected to determine if it is properly constructed and located. Proper construction and location of a well reduces the possibility of contamination. Modification of the well may be necessary in order to assure a safe supply of water. Until a satisfactory analysis is obtained, the water should not be used for drinking or cooking unless brought to a rolling boil for at least three minutes. **Please note that boiling will not eliminate a high nitrate concentration. In fact, boiling will increase the nitrate concentration.**
- If the resample is negative for coliform bacteria and the nitrate concentration is less than 10 mg/l as nitrogen, the water supply may be considered safe for drinking based on those sample results. Annual testing of the well should be performed to assure the well is providing a safe supply of water.

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