WASHINGTON COUNTY HEALTH DEPARTMENT

WELL WATER

When dealing with well water issues, the property owner should first check the well cap which is on top of the well casing. The cap should be sealed to prevent the entry of contaminants. Newer well caps have gaskets. The cap will often have an inverted screened opening that allows the entry of air, but prevents the entry of contaminants. The opening is on the underside of the cap and is about one inch in diameter. This allows air to enter the well and replace the water as it is pumped down. Some older well caps have a small inverted U-shaped pipe extending above the well cap. This pipe has a screen over the outer end. This allows the entry of air, but prevents the entry of insects and other contaminants. Well casings that end below ground or have cracks may be a source of contamination. Surface water may enter the casing during times of heavy rainfall.

A property owner can collect and submit a bacteriological drinking water sample to the State Public Health Laboratory. The sample bottles must be the ones provided by the health department. Samples cannot be collected in another container and then be transferred to the laboratory bottles. This would probably lead to contamination. The sample is tested for both coliform bacteria and E. coli. If either are present, the water is considered unsatisfactory for drinking. E. coli is a bacteria that grows in the intestines of warm blooded animals and is an indication that the well may have been contaminated with human or animal fecal wastes. E. coli can cause serious illness in humans. Coliform bacteria are a group of bacteria found in the intestines of humans and animals. Coliforms also occur naturally in the soil, on vegetation, and in surface waters. Some members of the coliform group do not cause disease. The presence of coliform bacteria in drinking water indicates that contamination of the water has occurred, and that other disease-causing microorganisms could also be present.

The $10.00 fee must be submitted with the sample. The check should be made payable to Missouri Department of Health and Senior Services. Please do not send cash. There is no charge to WIC assisted households, households with a child in Head Start, or Foster Homes. This must be listed under the “No Charge Justification” line on the form. A courier picks up samples at Washington County Health Department each business day. The time is subject to change. Recently it has been mid-afternoon. The front office may be able to provide the most recent information. (Samples that are mailed will not reach the Jefferson City lab in time.) The sample must be submitted on the same day it is collected. Samples received by the lab over 30 hours after collection will not be tested.

Bacteriological water samples may be collected using the following procedure:

- Wash hands thoroughly.
- Use a sampling bottle obtained from the health department.
- Take water sample from a smooth nosed cold indoor water tap if possible. A hot/cold mixing faucet is not preferred but may be used. Outdoor faucets are often frost-free and this can allow contaminants to enter. Outdoor faucets are also sometimes exposed to the presence of domestic animals. It is better to use a faucet that is not leaking.
- Remove aeration devices/screens.
- Run water fully for 2-3 minutes. If a mixing faucet is used, run hot water for three minutes and cold water for three minutes.
- Disinfect the tap with a diluted bleach solution. This can be made by mixing 1.5 teaspoons of unscented household bleach with one gallon of water.
- Flush the tap for an additional 2-3 minutes, then reduce to a gentle pencil-sized flow to fill the bottle without splashing.
- Grasp the cap along the top edge to remove. Do not contaminate the cap by touching the inside or laying it on a dirty surface. Be careful not to breathe on the open bottle or disinfected faucet or talk while collecting the sample. These samples are very sensitive to contamination.
- When filling the bottle, do not allow water to flow over your hand into the bottle.
- Fill bottle up just over the 100 ml line, but leave at least ½ inch of air space in the bottle.
- Replace the cap without touching the inside of the lid and tighten.

Results will usually be returned in about one week. If laboratory results indicate contamination of the well, the well could be disinfected and the drinking water could then be tested again. The water should not be retested until all of the chlorine has been completely removed from the system. Sometimes disinfection of the well will solve the problem and sometimes it will not.

**Disinfection of Drilled Wells**

Many well drilling companies will disinfect a well for a fee. Care should always be taken when working with electrical equipment in the presence of water. Some property owners choose to disinfect their own wells. Missouri Department of Health and Senior Services has provided the following procedures which may be used:

- Wear gloves and protective clothing.
- Shut off electrical power to the well.
- Remove any cover over the well casing to allow access to well water. Be aware that with some of the older wells, the cap may be helping hold the piping and the pump.
- Introduce the prescribed amount of chlorine. Unscented household bleach (5.25% chlorine) can be used. One gallon of bleach will disinfect a column of water that is 120 feet deep and one foot in width. It may be more effective to use chlorine bleach and chlorine tablets at the same time. The liquid bleach will treat the top of the water column and the tablets will sink to the bottom.
- Turn on outside hose and rinse down the inside of the well casing to help circulate the water and remove chlorine from the pipes and lines.
- Run the hose long enough for the odor chlorine to be detected.
- Replace well cover.
- Turn electricity to well back on.
- Turn on all faucets and run water until chlorine is detected, then turn faucets off.
- Let chlorine stand in the system at least 4 hours or preferably overnight.
- If chlorine is to be removed quickly, turn on an outside hose and allow it to run. Most of the water should be flushed through an outside hose so that the septic system does not become overloaded. Open all faucets and allow the water to run until no chlorine is detected. It may be better not to run the pump for too long a period of time as this could damage the pump.
- Wait several days after the chlorine is no longer present and submit another lab sample. If chlorine is present in the sample, the sample will be free of bacteria. However, this would not be a good indication of whether the sample would be satisfactory after all of the chlorine had been removed from the well. Occasionally, well water samples will be satisfactory until there is heavy rainfall and then the samples will contain bacteria again.
If a water sample is reported unsatisfactory for drinking, the owner should discontinue use of the supply for drinking or culinary (food preparation) purposes. Although unsatisfactory results do not conclusively confirm the presence of disease-producing organisms in the water, these results should alert one to such a possibility.

Emergency disinfection of water used for drinking or culinary purposes can be provided by:

1. Boiling vigorously for three minutes before use; or

2. Chemical disinfection: add two drops (double the amount for cloudy or colored water) of regular household bleach (5.25% chlorine) to each quart of water used. Mix thoroughly and allow to stand for 30 minutes before use.

Chlorine does not kill all microscopic disease-producing organisms. Giardia, for example, are not killed by chlorine.

Permanent disinfection of well water can be achieved by use of a positive feed chlorinator with 30 minute retention time. A positive feed chlorinator means that the chlorinator pump adds chlorine to the system whenever the well pump adds water. A pump with a capacity of 7 gallons per minute would need 200 gallons of retention capacity. The chlorine residual should be between .5 and 4.0 parts per million free available chlorine. Again, giardia are not killed by chlorine, but can be removed by use of a one micron filter. Most filters will not remove bacteria because bacteria are too small. Other forms of disinfection may not be as consistently effective as chlorination.

The health department also sometimes receives questions about what people describe as being turbid, murky, or cloudy water. Most new wells are now cased a minimum of 80 feet deep. Some older wells that were not cased very deep have water that becomes cloudy after a heavy rain. This is often due to clay particles being disturbed. This can be an indication that the water could also be picking up contaminants from the surface, but this is not always the case. The laboratory results for some extremely turbid samples were free of bacteria. It would be good to have the water tested to be sure. Some filtration systems will remove small clay particles, but the filters may become clogged fairly quickly and have to be changed often.

Some areas of Washington County have a large amount of iron in the underground rock and some well casings also made of steel which contains iron. A very small percentage of wells in the county contain a bacteria that feeds on iron. This bacteria is more of a nuisance than a health hazard, although its presence can provide a medium for some other bacteria to grow. Iron bacteria sometimes produce an oily sheen on the water. The water can also be a little slimy and the bacteria can produce red stains on plumbing fixtures. There may also be an odor that is described as being swampy or similar to rotten vegetables. The Minnesota Department of Health web site is an extremely good resource for those who believe they may have an issue with iron bacteria.