

# Testing Recommendations for Private Well Owners

The Vermont Department of Health has no requirements for testing private residential wells. However, to ensure that drinking water is safe, we recommend the following testing schedule:

- Total coliform bacterial test every year
- Inorganic chemical test every five years
- Gross alpha radiation screening test every five years
- Fluoride test if young children or infants regularly drink the water

## TOTAL COLIFORM BACTERIA

A Total Coliform bacterial test (called "Kit A" at the Vermont Department of Health Laboratory) is recommended every year for homeowners with private wells. Coliform bacteria are a large group of soil and intestinal bacteria that indicate potential well contamination and may cause health problems. However, coliform bacteria do not necessarily make you sick. If Total Coliform bacteria are found, the water is then checked to determine if the origin of the contamination is fecal. This result indicates whether recent animal or human waste has entered the water. Do not drink water that has tested positive for bacterial contamination. Boiling drinking water for one minute will kill bacteria so that it can be used for drinking.

## INORGANIC CHEMICAL TEST

This test is recommended every five years. The Vermont Department of Health offers a screening test "Kit C" for wells that includes arsenic, chloride, copper, hardness, iron, lead, manganese, nitrate, sodium and uranium. If you have young children in your family you may also want to test for fluoride.

These inorganic chemicals can create nuisance problems, or in some cases, health symptoms. When you receive test results they will be compared with maximum levels.

## GROSS ALPHA TEST

This test ("Kit RA") is recommended every five years. It is a screening test for mineral

radioactivity in water, for example, uranium and radium. This radioactivity is measured and reported in picoCuries per liter (pCi/L).

While water usually has some radioactivity, the gross alpha test will help determine if the levels are high enough to warrant additional testing due to potential health concerns. If screening results are equal to or greater than 5 pCi/L, the water should also be tested for radium. If the screening results are equal to or greater than 15 pCi/L, the water should be tested for radium and uranium.

## HEALTH CONCERNS

Health symptoms related to drinking water that is contaminated with bacteria can range from no ill effects to cramps and diarrhea. Potential health effects from chemicals in drinking water depend on the amounts found in the water, the length of time and amount of water used for drinking and, in some cases, personal health issues.

The following are concerns related to specific chemicals found in drinking water.

**Arsenic** has been linked to increased lifetime risk for bladder, lung, or skin cancer. Potential links between arsenic and cardiovascular disease, diabetes and other cancers are being studied, but the evidence to date is not conclusive. The maximum level for arsenic in water is 0.010 milligrams per liter (mg/L).

**Chlorides** do not cause health problems, but high chloride levels in drinking water may be a sign of other problems. For example, road salt can contaminate water supplies causing chloride levels to be high. High levels of chlorides in drinking water may also give water an unpleasant taste. The maximum level for chlorides in water is 250 mg/L.

**Copper** is an important mineral for the formation of red blood cells. However, high amounts of copper in water can cause stomachaches, vomiting, or diarrhea. Young children are more sensitive to high levels of copper than adults. Water with large amounts of copper can stain plumbing fixtures and give the water a metallic taste. The maximum level



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for copper in water is 1.3 mg/L.

**Hardness** (hard water) causes no known health risks. However, very hard water can cause reduced lathering of soap, and buildup of scale in water heaters, cookware and plumbing fixtures and valves. No health limits are established for water hardness.

**Iron** is an essential element and does not generally cause negative health effects. However, in large quantities it can cause staining of clothing, sinks, toilets and bathtubs. As with copper, iron can give water a metallic taste. The maximum level for iron in water is 0.3 mg/L.

**Lead** is a highly toxic metal that can cause serious health problems, especially for infants, children, and pregnant women. Nervous system, kidney, and red blood cell problems may be effects of exposure to high lead levels. In young children, lead may have harmful effects on nervous system and brain development. Lead has been used in making solder, fittings and fixtures found in household plumbing. The maximum level for lead in water is 0.015 mg/L.

**Manganese** does not cause health problems at levels typically found in drinking water and it is an essential element for human metabolism. However, manganese can discolor water; stain clothing, sinks, toilets and bathtubs; and can cause undesirable tastes in drinking water. The maximum level for manganese in water is 0.050 mg/L.

**Nitrate** in elevated levels is linked with two known health problems. Methemoglobinemia or "blue baby syndrome" is caused by an oxygen deficiency in the blood. This causes bluish skin tone in infants. In adults, nitrates can form chemicals called nitrosamines that have been linked to cancer. These may pose long-term health risks. Elevated nitrate levels in well water may also indicate other problems such as contamination from sources such as septic systems or fertilizers. The maximum level for nitrate in water is 10.0 mg/L. However, when levels exceed 5 mg/L, the source of nitrate should be investigated.

**Sodium** is a necessary dietary element and occurs naturally in water. High levels of sodium in drinking water may cause an unpleasant taste. For people with sodium restricted diets it may cause health problems by contributing to high blood pressure. Salt from septic systems or from road de-icing may elevate levels in wells and indicate other water problems. The maximum level for sodium in drinking water is 250 mg/L.

**Uranium** is a radioactive element found in nature, including soil, water, rocks, plants and food. Most ingested uranium is eliminated from the body, but a small amount is absorbed and may go through the bloodstream and kidneys. Elevated levels of uranium may increase a person's risk of kidney damage or lifetime risk of cancer. The maximum level for uranium is 20 micrograms per liter ( $\mu\text{g/L}$ ) in Vermont.

## FOR MORE INFORMATION:

If you have a particular smell, taste, color, sheen or other unusual indication of a water problem, use an alternative safe water source until test results are known. For further information, call the Health Protection Division at 800-439-8550. For Test kits, call the Public Health Laboratory at 800-660-9997.