

# Interpreting Your Laboratory Results

## **Old Sample**

If your laboratory report indicates old sample, your water sample was over 48 hours old when received in the laboratory. These samples are not tested because they may give inaccurate results. Check mail schedules from your community to Madison and resubmit a fresh sample. See the Link "Mailing Water Samples to Wisconsin Lab of Hygiene from St. Croix County"

## **Bacteriological Interpretation**

### **Coliform Absent (SAFE)**

If your laboratory results indicate Coliform Absent (SAFE), no coliform bacteria were found in your water sample. If you collected the sample according to directions supplied with the kit, you can be reasonably sure your water is safe for drinking or general domestic use, from a bacteriological standpoint. Retest a "safe" well annually--or at any time it has been repaired or modified. Also test whenever there is a change in appearance, taste, odor or flow.

### **Coliform Present (UNSAFE)**

If your laboratory results indicate Coliform Present (UNSAFE), coliform bacteria were found in the water sample. Coliform bacteria are found in human and animal feces, as well as in surface water. Their presence in wells indicates unfiltered or poorly filtered surface or near-surface waters have found their way into the groundwater or entered through an opening in, around, or at the top of the well casing. This water is a potential health hazard.

### 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 are usually free from bacteriological contamination because they tend to seal off near-surface and surface waters from the well. However, if they are contaminated, one of the following reasons is likely the cause:

- The casing is not properly sealed into the rock formation.
- The casing is not terminated far enough above the ground.
- If the well is equipped with a hand pump, the pump has not been mounted watertight on the casing, permitting surface water to enter the well at the top.
- The well terminates in a nonconforming pit, which may be subject to flooding or seepage of groundwater.
- In old wells, the casing may have rusted through, leaving holes near the ground surface through which polluted surface water can enter.
- Rock outcroppings, sink holes, quarries or abandoned wells in the production well area may allow surface water to contaminate the groundwater aquifer supplying the well.
- 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.

## Locating the Contamination Source

Before attempting to locate the contamination source for an unsafe well, first be certain that you closely followed the instructions for collecting water samples. If not, collect another sample following instructions closely. When sampling error has been ruled out, the well and the surrounding area should be inspected for possible pollution sources. These include openings at the top of the well; old, rusty, or damaged casings; improper casing installation; faulty pump installation; and close proximity of the well to septic tanks, tile fields, sewers, sink drains, privies, barnyards, feedlots, abandoned wells, rock outcroppings, sink holes and quarries. If any of the above are found to cause contamination problems, you must make changes or repairs to ensure safe drinking water. Licensed well drillers, pump installers, DNR officials or county sanitarians can assist you in making observations and recommend improvements.

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## **Nitrate Interpretation**

If your laboratory report shows your water's nitrate level is less than 10 mg/L\* as N (the symbol < indicates "less than"), the water is considered to be safe for infant formula preparation or drinking water.

If your nitrate level is 10 mg/L\* as N or greater, your water exceeds the federal standard for nitrate in public drinking water supplies.

Nitrate in water can change to nitrite in some infants, which can cause a condition known as methemoglobinemia, or "blue baby syndrome." Nitrite can react with hemoglobin in infants' blood to form methemoglobin. This reduces the blood's ability to carry oxygen to body tissues. The skin then takes on a bluish hue similar to that caused by suffocation.

Adults and children older than six months of age do not appear to be affected by nitrate concentrations in drinking water. As a child develops, gastric juices generally become more acidic, preventing nitrite formation. Susceptibility to this disorder among infants varies widely.

If you have an infant in your household and your water exceeded the federal nitrate standard, don't use your well for drinking water. Instead, obtain water from another source or treat your well water with a special ion exchange system or reverse osmosis unit. Do not boil the water to reduce the nitrate level--boiling actually increases the nitrate due to evaporation of the water. Nitrate levels may vary, so you might want to check your water at different times of the year.

*\* mg/L is equal to parts per million or ppm.*

## **Fluoride Interpretation**

Because fluoride in drinking water may reduce cavities by 20 to 40 percent, fluoride supplements are recommended for children when the drinking water concentration is low. Your physician or dentist can prescribe the correct dosage of supplements based on the child's age and your water test results. Use the following chart to determine if the children in your home should receive fluoride supplements:

	Drinking Water Fluoride Concentration		
Age in years	Less than 0.3 mg/L*	0.3 to 0.7 mg/L	More than 0.7 mg/L
Birth to 2	yes	no	no
2 to 3	yes	yes	no
3 to 16	yes	yes	no

\*Mg/L is equal to parts per million or ppm.

### **For More Information**

If you need more information about bacteriological interpretation, contact your local Department of Natural Resources office or the State Laboratory of Hygiene Water Microbiology Unit, 2601 Agriculture Drive, Madison, WI 53706 (608-224-6262).

For more information on nitrates found in ground water, contact your local Department of Natural Resources office or the Inorganic Chemistry Unit of the State Laboratory of Hygiene, 2601 Agriculture Drive, Madison, WI 53706 (608-224-6202).

For additional information about fluoride in your water, contact your dentist; the Bureau of Public Health, oral health consultant (608-266-5152); or the State Laboratory of Hygiene Inorganic Chemistry Unit (608-224-6277).