

The Dirty Dozen

What is in your water?

Bacteria Basics

Bacteria are microscopic organisms that can be found just about anywhere. Bacteria in your water can cause:

- ◇ Strep throat
- ◇ Infections of any kind, including ear, kidney, and bladder
- ◇ Intestinal flue symptoms
- ◇ Gastro-intestinal illness

Most labs will give a result of Presence or Absence of bacteria. If your water has bacteria, please see information about how to shock chlorinate your well at www.ext.colostate.edu/natres/06703.pdf. Bacteria

Not-so-Nice Nitrates

Nitrate is a naturally occurring form of nitrogen found in soil. Plants use nitrates from soil to get nutrition. High levels of nitrates are associated with:

- * Fertilizers
- * Manure
- * Animal feedlots
- * Septic systems
- * Municipal wastewater/sludge

Nitrates are absorbed into the blood, and can reduce oxygen supply to the brain. In babies, this can cause **blue baby syndrome**, and can result in death. Pregnant women and adults with reduced stomach acidity are also susceptible. Nitrate levels exceeding 10 mg/L have been documented to cause birth defects and Downs-Syndrome.

Arsenic Angst

Arsenic occurs naturally in many rocks, especially minerals and ores. Arsenic in drinking water is a serious health risk. Long-term exposure has been linked to:

- * Skin cancer
- * Lung cancer
- * Cancer of the bladder or kidneys
- * Hypertension
- * Cardiovascular disease
- * Diabetes
- * Reproductive defects
- * Changes to skin, such as pigmentation and thickening

Even drinking water concentrations of less than .01 mg/L have shown increased risks of lung and bladder cancers.

Too Much of a Good Thing (or Fluoride Follies)

A little fluoride does help prevent tooth decay. But if your water has more than 4 ppm, it could make things worse.

Too much fluoride can cause:

- * Mottled or discolored teeth (especially in children)
- * Bone disease (including pain & tenderness of the bones) with long-term exposure

I Can't Remember Where I put the Aluminum

Aluminum in drinking water (greater than 0.1 mg/L) can increase the risk of:

- ◇ Dementia
- ◇ Alzheimer's Disease
- ◇ Parkinson's Disease
- ◇ Lou Gehrig's disease

Oh, My Aching Iron!

Iron occurs naturally all over the world. Rainwater dissolves iron in rocks, and causes it to leach into aquifers. Iron can turn your water reddish-brown, and will leave stains on fixtures, tableware and laundry. Sometimes bacteria will react with iron and create a slime that will clog plumbing and smell bad.

If you have **arthritis**, or any arthritic condition, you should avoid iron. A reverse osmosis system can remove iron from your water.

The Lowdown on Lead

Lead in water is usually a result of old plumbing. Lead can cause:

- * High blood pressure
- * Anemia
- * Damage to nervous system, reproductive system, & kidneys
- * Convulsions, coma or death

In children, lead can cause:

- * Learning disabilities
- * Behavioral problems
- * Mental retardation

Lead can be removed by replacing old pipes and plumbing.

Total Dissolved Solids (TDS)—TDS are inorganic salts (potassium, magnesium, calcium, sodium, bicarbonates, chlorides and sulfates) and small amounts of organic matter that are dissolved in water. An elevated TDS may cause the water to be corrosive, salty or brackish in taste, form scaly deposits, and may interfere with hot water heater efficiency. High TDS may also indicate an elevated level of nitrate, arsenic, aluminum, copper, lead, etc.

The Case Against Cadmium

Cadmium is a metal found in natural deposits of ores, and used in metal plating and coating operations, such as enamel bakeware. It is also found in smoke from burning fossil fuels, municipal waste, and cigarettes. People who smoke have higher levels of cadmium than those who do not. Short term exposure to high levels (above 5 ppb) can cause nausea, vomiting, diarrhea, muscle cramps, convulsions & shock. Long-term effects include damage to liver, kidney, bone, and blood, and elevated levels of cancer.

A little ph phishy

The ph value of water is the measure of acid or alkalinity. A lower number indicates acidity (a lemon has a ph of 2.5) and higher number shows alkalinity.

Water with a low ph would be acidic, soft, and corrosive. When water is corrosive, there can be high levels of iron, manganese, copper, lead & zinc. This can damage plumbing, discolor laundry, cause a metallic or sour taste, and create a blue-green stain on plumbing fixtures. **Low ph, over a long period of time, can contribute to loss of bone density, stomach ulcers, and acid reflux.**

Higher ph numbers indicate that the water is hard, and may cause accumulations on dishes and plumbing fixtures.

Miscellaneous Misfits

Beryllium—Beryllium occurs naturally in certain types of bedrock. Inhaling it, through the use of humidifiers and vaporizers, can cause weakness, tiredness, overall fatigue & difficulty breathing. A lifetime of exposure to high levels can cause damage to bones and lungs, and a higher risk of cancer.

Copper—Copper is another naturally occurring element. Too much in your drinking water can cause vomiting, diarrhea, stomach cramps, and nausea. Children under one year of age are more sensitive. Long-term exposure can cause liver & kidney damage.

Sodium—High levels of sodium in drinking water (20 mg/L) can increase blood pressure and contribute to heart disease.

Sulfate—Sulfate occurs naturally, but at high levels can cause diarrhea. Levels of 250 mg/L have been shown to contribute to kidney stones.

Manganese—High-level exposure over the course of years can result in damage to the nervous system, in a syndrome that resembles Parkinson's. Infants on formula are at risk, as are the elderly, and pregnant women.

Zinc—Zinc occurs naturally in the environment, but is also caused by mining, smelting, steel production, & burning coal. Large amounts over long periods of time can cause anemia, nervous system disorders, damage to the pancreas, and lower levels of good cholesterol.

Help is On the Way!

Check the first column of numbers on your test results to determine amounts in your water. The second column explains the maximum contaminant level (MCL) as set by EPA. If you EXCEED the MCL, you may want to consider treating your water. Results that are more than 50% of the MCL are considered HIGH, and need to be watched. You may want to consider treating for those problems, as well.

If you need help understanding the results of your well test, visit <http://region8water.colostate.edu/wqtool/index>. You can type in numbers from your test, and get an analysis of any water problems.

For more information, please see slvec.org (Water Quality Project) and www.ext.colostate.edu.