

Your Water Analysis
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Man cannot survive more than a few days without water. Besides drinking liquids we also obtain water from other sources such as vegetables and fruits.

This pamphlet has a short description of the items which you requested, and some other items which are commonly tested for. If you have any further questions, we will be glad to be of assistance. Please call the DES Laboratory at (603) 271-3445.

DEFINITION OF ABBREVIATIONS

MCL: Maximum Contaminant Level. The level that cannot be exceeded by public water systems.

SMCL: Secondary Maximum Contaminant Level. Threshold levels for aesthetic concerns; taste, odor, and staining.

mg/L: milligrams per liter, which is approximately equal to parts per million (ppm).

pCi/L: picoCuries per liter.

AL: Action Level. 90 percent of samples must fall below this level, pertains mainly to public water supplies.

TOTAL COLIFORM and E. COLI Present is Unacceptable

Total coliform are a group of bacteria with common characteristics used to indicate unacceptable water quality. Within the total coliform group, the E.coli bacteria are specifically used to indicate fecal contamination. High non-coliform counts are usually from the drilling of the well or an indication of surface water intrusion. When non-coliform are greater than (>) 200cts/100ml, then can obscure the growth of coliform and are unacceptable..

If total coliform, especially E.coli and/or high non-coliform counts are present in a well, it needs to be checked for construction problems. It is very common for new or modified wells to have unacceptable bacteria counts, and often it is necessary to disinfect with bleach or chlorine tablets more than once. If you have a positive total coliform, E.coli, or high non-coliform count, you should have received an "Unacceptable Bacteria Notification" which includes disinfection instructions.

pH Recommended 6.5 - 8.5

pH is a measure of the acidity of a sample. The scale is 0 - 14. A reading of 0 - 7 is acidic; 7 - 14 is basic (or alkaline), and 7 is neutral. Acidic water along with low hardness (soft water) tends to be corrosive to your water pipes, potentially dissolving lead and copper. Basic water itself is not a problem, but may have a bitter taste. Alkalinity, which is a separate measurement, is your water's buffering capacity against drastic pH changes.

HARDNESS

SOFT:	0-75 mg/L
MODERATE:	76-150 mg/L
HARD:	151-250 mg/L
VERY HARD:	250+ mg/L

The contributors to hardness are calcium and magnesium. The presence of these elements in general is not a health hazard, but hardness elements tend to plate out on water pipes and heating coils in hot water tanks, and reduce the effectiveness of detergents. Water treatment companies often express hardness in grains per gallon. 1 gpg equals 17.1 mg/L

IRON

SMCL = 0.30 mg/L

Over 0.30 mg/L, iron becomes a nuisance element. It will show its presence as rust stains on water fixtures and if chlorine bleach is used in the laundry, rust spots will appear on clothes. If this happens, use a non-chlorine bleach with your clothes. Common iron removal methods include deionization, oxidation, and filtration.

MANGANESE

SMCL = 0.05 mg/L

Over 0.05 mg/L manganese becomes a nuisance element and its presence is detected by purplish black staining of kitchen and bathroom fixtures. The SMCL is the threshold for smell and taste for most humans. Above this level your drinking water would have an oily vinyl or metallic taste. A "rotten egg" smell due to the presence of hydrogen sulfide is often associated with a high iron and manganese level, which tends to disappear when the iron and manganese are removed. Manganese is also an essential nutrient for humans at approximately 5 mg per day.

SODIUM

SMCL = 250 mg/L

Some sodium is found in all natural water supplies, but more so in areas where seawater and road salt seep into the ground. Sodium has no set hazard level, but those individuals on a low sodium diet should take into account the amount of sodium in their water when determining overall sodium intake.

CHLORIDE

SMCL = 250 mg/L

Although chloride is not considered a health hazard, the standard has been set because of the level at which the average person notices a salty taste. Chloride is associated with infiltration of road salt, fertilizer, backwash from a water softener and even seawater.

NITRATE-NITROGEN
NITRITE-NITROGEN

MCL = 10 mg/L
MCL = 1 mg/L

The presence of nitrate and nitrite generally indicates contamination from a pasture, manure pile, decomposed vegetation or fertilized agricultural land. Nitrates change to nitrites in the body, which reduces oxygen uptake by the hemoglobin. Boiling the water will not help, it will only concentrate the nitrates.

FLUORIDE

MCL = 4.0 mg/L

Fluoride has been widely used to prevent tooth decay, but in excess it can cause spotted or even pitted teeth, called fluorosis. Recommended adult intake of fluoride is 1.0 - 2.5 mg per day. Children are often given a supplement if their home drinking water is not sufficient.

COPPER

AL = 1.3 mg/L SMCL = 1.0 mg/L

The high copper concentrations in New Hampshire are almost always a result of corrosive water picking up copper from plumbing lines. The acceptable limit was set because above 1.0 mg/L the water may have an unpleasant taste and cause blue or green staining on water use fixtures.

LEAD

AL = 0.015 mg/L

Chronic ingestion of lead has been associated with a large number of harmful health effects, and therefore water with excessive lead levels should not be consumed. Most of the high levels are attributed to old lead piping and even lead solder used on copper piping. In most cases lead in your drinking water can be reduced by running the water before filling a glass to drink. Water neutralization will reduce corrosion damage.

ARSENIC

MCL = 0.010 mg/L

The U.S. EPA has set the health standard at 0.010 mg/L, which is proposed to be significantly lowered over the next few years. Some of these health effects are bladder cancer, skin irritation, skin cancer, liver and central nervous system damage. Its origins in New Hampshire drinking waters has not been defined, yet natural bedrock sources and manmade arsenic compounds are primary suspects.

"ANALYTICAL" GROSS ALPHA

There are several radioactive elements that occur and dissolve easily into groundwaters of New Hampshire. They emit ionized radiation called alpha particles which are believed to be carcinogenic. The Analytical Gross Alpha test is a "total" measurement of radioactivity from the alpha emitting elements including Uranium and Radium.

Because there are separate MCL 's for the elements Uranium and Radium (see below), further additional testing may be recommended to determine the activity from radium and/or isotopic activity of uranium.

URANIUM**MCL = 30ug/L(20pCi/L)**

A naturally occurring radioactive contaminant that occurs in both ground water and surface water. It has been found to cause bone cancer in humans at high exposure levels, and is believed to be toxic to kidneys. The MCL is expressed in terms of weight,(ug/L). This weight (mass) essentially produces 20 pCi/L of gross alpha radioactivity , which is included in the "analytical" gross alpha measurement.

RADIUM**MCL = 5pCi/L**

A naturally occurring radioactive contaminant that occurs primarily in ground water. It has been found to cause bone cancer in humans at high exposure levels, and possibly other cancers as well.

RADON**No MCL yet**

A naturally occurring radioactive contaminant that is a decay product of Radium. It is a gas that is released into the air during water use. Radon has been found to cause lung cancer in humans at high exposure levels. A radon concentration of 10,000 pCi/L potentially could add 1 pCi/L of radon to one's home air level. EPA's recommended airborne action level is 4 pCi/L.

VOLATILE ORGANIC COMPOUNDS

No volatile organic compounds (VOCs) are normally detected in a well. The presence of VOCs may be indicative of a well contaminated by petroleum products, industrial solvents or by-products from the process of disinfecting a well. The presence of any of these compounds is potentially a health risk.

For an interpretation of your results, please call the DES Water Supply Engineering Bureau at (603) 271-3139. For health risk questions, please call the N.H. Department of Public Health, Risk Assessment Unit at (603) 271-4664.

BIBLIOGRAPHY

Anderson, S.H., Beiswenger, R.E., Purdon, P.W., *Environmental Science*, 3rd ed., 1987, Merrill Pub. Co., Columbus, OH

Committee on Medical & Biologic Effects of Environmental Pollutants, *Arsenic*, 1977, National Academy of Sciences, Washington, D.C.

Keough, C., *Water Fit to Drink*, 1980, Rodale Press, Emmaus, PA

ADDITIONAL DES FACT SHEETS

The following is a partial list of **fact sheets** that provide more detailed information on drinking water. They can be obtained through the "List of Publications" at [DES's home page](#) or by calling DES at (603) 271-2975.

Bedrock Well Design

Dug Well Design

Use of Lake or Stream Water for Domestic Water Supply

Considerations When Purchasing Water Treatment Equipment

Hardness in Drinking Water

Sodium and Chloride in Drinking Water

Iron and Manganese in Drinking Water

Nitrate/Nitrite in Drinking Water

Arsenic in Drinking Water

Radioactivity in Drinking Water

Radon in Air and Drinking Water

Corrosivity of Water Supplies

Hydrogen Sulfide in Drinking Water Organics in Drinking Water

Organics in Drinking Water

Giardiasis in Drinking Water

Fluoride in Drinking Water