



Guide to Understanding Mineral Analysis

The following information is provided to assist you in the interpretation of the results of your water analysis. After you have read the information, please feel free to give us a call if you still have questions or concerns.

This analysis series was designed to give a fairly accurate determination of water potability while minimizing costs. It does not determine all possible contaminants. An analysis for all potential contaminants would be too costly. If there is anything in the vicinity of your well that has a potential for contaminating your well, please contact us to see if it would be covered under this testing or if further testing may be necessary. It should also be kept in mind that as the amount of material in the water increases, the likelihood of something harmful being in the water also increases.

pH

The pH of the water is a measure of the acid-base equilibrium due to dissolved compounds, salts and gases. A pH of 7 is considered neutral, with a pH less than 7 being acidic and a pH greater than 7 being basic. The farther the pH is from 7 the more acidic or basic the water is. EPA has recommended that domestic water supplies should have a pH between 6.5 and 8.5. The greatest importance of pH in drinking water is not in health effects as much as it is in the corrosivity on the pipes. As a general rule, as the pH of water decreases, it becomes more corrosive.

Conductivity

Conductivity (Specific Conductance) is the ability of the water to conduct electricity. Contrary to popular belief, pure water will not conduct electricity. It is through the impurities in the water that the electricity is conducted. Most inorganic salts and compounds conduct electricity and most organic matter does not. Conductivity, therefore, is an indirect measurement of the amount of salts dissolved in the water. Many water conditioning companies give a TDS value that is actually a conductivity reading multiplied by a factor. In most cases, this is fairly accurate. Some variation from the actual TDS will occur depending upon the content of the water. EPA has made no recommendation for conductivity and relies upon the more precise measurement of the TDS. Conductivity can be used as an aid in determining suitability of water for agricultural purposes.

Total Dissolved Solids (TDS)

Total dissolved solids is the amount of material dissolved in the water, typically consisting of inorganic salts with a small amount of organic matter present. As TDS increases, the water quality decreases. The effects of high amounts of TDS are variable, depending upon its composition. EPA has recommended that domestic water supplies should not contain more than 500 mg/L of TDS. This recommendation was made for all water in the United States. The make-up of ground water in Wyoming is such that a TDS of up to 1500 mg/L has been considered acceptable.

Hardness

Hardness is a measure of the calcium plus magnesium ions present in the water. The hardness does not usually adversely affect the drinking water quality, yet does affect the plumbing and fixtures through scale build-up as well as reducing the efficiency of detergents used in normal household cleaning. Water softeners are available commercially which will remove the hardness from the water. However, soft water is more corrosive than hard water. Most softening units replace hardness with sodium.

Hardness (continued)

0 - 75 mg/L	Soft
75 - 150 mg/L	Moderate
150 - 300 mg/L	Hard
300+ mg/L	Very Hard

Water conditioning people typically measure hardness in grains/gallon rather than mg/L. To convert mg/L to grains/gallon divide mg/L by 17.12.

Nitrate as N

EPA has set a maximum limit of 10.0 mg/L for Nitrate as N in public water supplies. Infants up to 3 months of age have been found very susceptible to nitrate poisoning when their formula is made with water containing more than 10.0 mg/L of Nitrate as N. Adults can usually withstand higher levels of Nitrate.

Sodium

No specific limit has been set for sodium in drinking water supplies since the general population is not adversely affected by sodium. For people on low sodium diets, the amount of sodium in their drinking water is important and needs to be taken into consideration when calculating their daily intake.

Sulfate

The EPA has recommended that public water supplies have a sulfate content of 250 mg/L or less. The apparent effect of high sulfate concentrations is that of a laxative effect towards new users. As people become accustomed to the sulfate, the laxative effect diminishes. Much of the ground water in Wyoming has high sulfate concentrations and has been used for years without problems. Most individuals have been found to acceptably tolerate sulfate levels up to 750 mg/L after an initial period.

Total Coliform Bacteria (for Mineral Analysis with Bacterial Analysis)

Bacteriological examinations of water are made to determine its suitability for drinking and general domestic use. Coliform bacteria are found in the feces of man and other warm blooded animals, and so are present in sewage, surface water and shallow groundwater exposed to contamination. Though not necessarily disease producing in themselves, coliforms can be indicators of organisms that cause assorted gastroenteric infections including dysentery, hepatitis, typhoid fever, cholera, and others.

Our laboratory uses a presence/absence test for detection and identification of coliform bacteria and *E. coli*. Results from this method are reported as presence of coliform bacteria in 100 milliliters (mL) of sample. If coliform bacteria are not detected in the sample, ND (not detected) is reported.

If test results indicate the presence of coliform bacteria, use of the water for drinking should be stopped immediately. We provide information on how to chlorinate and disinfect your water source. A retest of the water for bacteria is recommended after the chlorination procedure has been done. If the retest is still unsatisfactory, an investigation should be conducted to determine the source of contamination. Consult your local Public Health Official for assistance .