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Nitrate

Why nitrate can be a problem.

When an infant consumes formula made with nitrate or nitrite contaminated water, the nitrates are converted in the child's stomach to nitrite. The nitrite is then absorbed into the body and reacts with the blood (hemoglobin) to form methemoglobin. Since hemoglobin carries the oxygen throughout the body and methemoglobin can not carry oxygen, the infant can suffocate due to lack of oxygen. This condition is known as "Blue Baby Syndrome".

How to tell if water is contaminated with nitrate.

A recent study conducted by the EPA estimated that over 600,000 households had nitrate levels above the **safe drinking water standard of 10 milligram NO₃-N per liter (nitrate as nitrogen)** and a study by the US Geological Survey showed that at least 6% of the rural wells in the United States exceed the safe drinking water standard. The primary sources of nitrogen include: excessive or improper fertilizer use and improper storage of manure, inadequate storm water management and erosion protection, improper siting, design, and maintenance of septic systems, landscaping fertilizers for lawn maintenance. Nitrate contamination is typically a problem in agricultural areas, but other rural non-agricultural communities are also at risk.

Because nitrate is tasteless and odorless, water must be chemically tested to determine if it is contaminated. To have your water tested, you can get a sample container from Montana Environmental Laboratory, draw the sample from an untreated faucet and get the sample to the lab promptly to ensure a reliable test.

Accurately determining the nitrate level in a well can be difficult since nitrate levels vary according to the time of year. For this reason, spring is the best time to test since snow melt and rains will leach any excess nitrate into the groundwater. A water test done in late fall can be misleading because the well may be temporarily low in nitrate if there have been no recent heavy rains. **To protect the health of your family, we suggest that annual water tests be performed for Coliform bacteria, nitrates, arsenic, fluoride, pH and specific conductance.**

On your Analytical Report, the number under the result column is the concentration of nitrate in the sample. The units are usually expressed as mg/L (milligrams per liter) which is equivalent to parts per million. The next column to the right is "RL" or Reporting Limit. RL is how small of an amount that can be detected in a sample. The next column to the right is "MCL", which stands for Maximum Contaminant Limit. This is the maximum amount of a contaminant that is safe to drink. For Nitrate, the MCL is 10 mg/L. If your result is less than one mg/L, your water has a very low level of nitrates. If the amount of nitrate in your sample is between 1 to 5 mg/L, there are some nitrates in your water, but it is still safe to drink. If the result is between 5 to 10, it is approaching the Maximum Contaminant Limit. In this case we suggest monitoring of your nitrate levels on a quarterly basis to ensure that the levels do not exceed 10 mg/L. If your sample exceeds the MCL of 10 mg/L, the water is not fit to drink without treatment.

Montana Environmental Lab recommends that you save this result with your household papers. If the levels of nitrate in your well water increase significantly in future years testing, your well may be contaminated from septic tank effluent.

Nitrate Removal:

The ways to prevent nitrate contamination of a water supply include: proper siting of water system, proper management of fertilizers and manure, proper well construction (sanitary wells). The easiest way to deal with a contaminated well is to find a new, clean source of water. If you do not have access to a new water supply, the contaminated water can be treated by reverse osmosis to remove the nitrate.

It is critical that drinking water is tested for this contaminant.