



### WHAT IS NITRATE?

Nitrate is a chemical compound made up of nitrogen and oxygen, which can be found at low levels in foods (vegetables and meat

preservatives) and well water. Nitrate is colorless, odorless, and tasteless. Nitrate can become harmful when bacteria in the environment, food, or in the human body convert nitrate into nitrite.

### WHAT ARE THE SOURCES OF NITRATE IN DRINKING WATER?

Although low levels of nitrate are naturally present in drinking water, the following sources could increase the nitrate to harmful levels: fertilizers and manure, human and animal waste, landfills, decaying plants, and explosives. Nitrate from these sources dissolves easily and does not bind to soil, so it can easily get into well water. Nitrate does not evaporate and remains in the water until taken up by plants or other organisms.

### WHAT ARE SAFE LEVELS OF NITRATE IN DRINKING WATER?

New Mexico and the Environmental Protection Agency (EPA) say that public water systems should not have nitrate above 10 milligrams per liter (mg/L). Federal law requires that public water systems be tested for nitrate. Private well owners are advised to have their water tested for nitrate and should also use the 10 mg/L standard as a safety guideline. The standard of 10 mg/L is for "nitrate as nitrogen" (NO<sub>3</sub>-N). Some labs report results as "nitrate as nitrate" (NO<sub>3</sub>-NO<sub>3</sub>). If your results are reported as NO<sub>3</sub>-NO<sub>3</sub>, then the applicable standard is 45 mg/L.

***The EPA Maximum Contaminant Level for Nitrates is 10 mg/L.***

### HOW CAN HIGH NITRATE LEVELS AFFECT THE HEALTH OF MY FAMILY?

**Infants:** High nitrate levels (above 10 mg/L) can pose a special risk for infants. Infants can develop "blue baby syndrome" (also known as methemoglobinemia), in which the nitrate interferes with the ability for blood to carry needed oxygen throughout the body. Symptoms can include shortness of breath and bluish skin coloring around the mouth, hands, or feet. If the condition is severe, it could lead to convulsions, coma, and even death. Medical treatment should be sought immediately if these symptoms are present.

**Children and Adults:** Most children and adults can take in larger amounts of nitrate without experiencing the same health effects as infants. However, pregnant women, nursing mothers, and people with low stomach acid conditions could be affected by water with high nitrates.

These people should not consume water with nitrate levels above 10 mg/L.

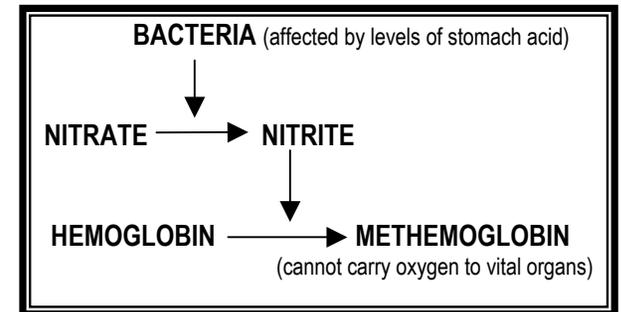


**Long-Term Health Effects:** Little is known about possible long-term health effects from high nitrate levels. Some studies suggest that there might be a small risk for stomach, esophageal, or bladder cancers in people exposed to high nitrates for many years. Other studies did not find that drinking water with high nitrate was linked to any of these cancers. EPA believes that water at or below 10 mg/L is acceptable for daily drinking over a lifetime and doesn't pose a methemoglobinemia risk for infants or adults.

The most common way of being exposed to nitrate is by eating food or drinking water with nitrate. Nitrate is not believed to be absorbed in high amounts through the skin. Therefore, showering in nitrate-contaminated water is not considered to be a health risk.

### HOW DOES NITRATE AFFECT THE BODY?

Infants, pregnant women, and some adults have digestive systems that produce less stomach acid, which allows more bacteria to grow. These bacteria increase the conversion of nitrate into the more harmful nitrite. Nitrite in the blood converts hemoglobin in red blood cells to methemoglobin. Unlike hemoglobin, methemoglobin cannot carry oxygen to the vital organs in the body. In addition, infants are at greater risk because they drink 2-3 times as much water than adults by body weight, and their bodies cannot convert methemoglobin back into hemoglobin as efficiently as adults.



### HOW CAN NITRATE POISONING BE DETECTED AND TREATED?

The main symptoms for nitrate poisoning are bluish coloring around the mouth, hands, or feet and difficulty breathing. If these symptoms are present, a blood methemoglobin test can be performed. Your physician or hospital may decide to use other specialized tests.

If this condition is detected early enough and is not life threatening, then all that is needed is a change to drinking water with nitrate levels less than 10 mg/L. If the condition becomes life threatening, infants can be given treatment by a medical professional, which quickly reduces harmful levels of methemoglobin in the body.

**HOW CAN I PROTECT MY FAMILY FROM HIGH NITRATE?**

1. DO NOT FEED high nitrate water (more than 10 mg/L) to infants — either directly or in infant formula. Pregnant women, nursing mothers, or people with reduced stomach acidity conditions should also avoid drinking high nitrate water.
2. DO NOT BOIL high nitrate water. Boiling actually evaporates some of the water, but leaves the nitrate behind, resulting in even higher nitrate levels.
3. SEEK MEDICAL ATTENTION immediately if your baby's skin turns blue or gray.

**CAN NITRATE BE REMOVED FROM DRINKING WATER?**

Nitrate can be removed by treating the water with one of the following methods: ion exchange, reverse osmosis, or electro dialysis. These treatment methods can be very expensive and require careful maintenance.

**DO NOT BOIL  
high nitrate water!**



Boiling the water will **NOT** lower the nitrate level, but it will actually **INCREASE** the level. *Carbon or other mechanical filters and standard water softeners do not remove nitrates.*

***Boiling water does NOT lower nitrate levels. In fact, levels will be higher after boiling!***

**HOW OFTEN AND WHERE CAN I HAVE MY WATER TESTED?**

If you are using private well water, you should have a nitrate and a standard bacteriological test done. This is especially important if you are pregnant or have an infant in your household. If levels of nitrate between 5-10 mg/L are detected, you should have your water tested once per year to make sure that the levels do not go above the standard of 10 mg/L.

Water samples can be tested for bacteria and nitrates at private laboratories (found under "laboratories-testing" in the Yellow Pages).

**FOR MORE INFORMATION.....**

For water treatment and water testing questions:  
**NM Environment Department**  
Drinking Water Bureau, 1-877-654-8720  
Ground Water Quality Bureau, 1-800-219-6157



For health-related questions:  
**NM Department of Health**  
Office of Epidemiology, (505) 827-0006



For additional information on safe drinking water:  
**EPA Safe Drinking Water Hotline, 1-800-426-4791**

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**New Mexico  
Environment Department  
and  
Department of Health**