



Nitrates in Private Well Water

Nitrates and nitrites can enter your drinking water supply by leaching into groundwater or through runoff. Sources of nitrates include fertilizers, faulty septic tank systems, and animal waste.

Testing is the only way to detect the presence of nitrates/nitrites since they are colorless, odorless, and tasteless in drinking water.



General Information:

Nitrates and nitrites, which are chemical compounds made up of nitrogen and oxygen, can come from both natural (e.g., soil and water) and man-made sources (e.g., fertilizers). **In private well water, nitrates are more commonly detected than nitrites.**

A maximum contaminant level (MCL) is an enforceable limit on the amount of a contaminant allowed in *public* drinking water. Nitrates have an MCL **10 mg/L** and nitrites have an MCL of **1 mg/L** in drinking water. Levels above the MCLs may pose health risks, particularly for pregnant women, infants, and the elderly population. **It is recommended to test for nitrates and nitrites annually.**

Potential Health Effects:

High levels of nitrates and nitrites can cause **methemoglobinemia** (also known as **blue baby syndrome**), a condition in which insufficient oxygen is carried to red blood cells. Bottle-fed infants (< 6 months) that are fed formula made with water that contain high nitrate levels are most susceptible to develop **methemoglobinemia**. Symptoms may include **abdominal cramping, headaches, increased heart rate, decreased blood pressure, nausea, and vomiting**. Some studies suggest that nitrates and nitrites can cause cancer based on animal studies, although these findings are still considered inconclusive.

Reducing Exposure to Nitrates & Nitrites in Drinking Water:

Water Treatment: Treating your drinking water and identifying the source of contamination, is the most effective solution to reduce nitrate/nitrite levels. Consider consulting with a water treatment professional to determine the best treatment for your home. It is important to test your water after installing treatment to ensure it is working properly to reduce levels. Always follow the manufacturer's instructions for proper and effective use.

Water treatment options include:

- **Ion exchange** – nitrates/nitrites are removed through exchange with chloride ions
- **Reverse osmosis** – point-of-entry (treats all water in home) and point-of-use (treats at one tap in home) options available; uses a semi-permeable membrane to filter out undesirable molecules
- **Distillation** – water is boiled to convert liquid to vapor to remove nitrates/nitrites, and then vapor is cooled back into a liquid

Other options: Drinking and cooking with bottled water is another alternative, although this may be more costly in the long term. Boiling water will not reduce levels of nitrate/nitrite and can increase levels through evaporation. Although showering/bathing with elevated levels of nitrate and nitrite is considered safe, be careful not to accidentally ingest the water when showering/bathing.