

Nitrates

What You Need to Know

The best protection against contaminants harming your family's water supply is having an annual checkup of your water well system. Additional tests are suggested in special circumstances—floods, heavy rainfalls, known chemical spills—to ensure that you always have safe drinking water.

Contamination from nitrates is one problem that can arise after severe flooding or heavy rains in rural areas. What follows is more information about nitrates.

What are nitrates?

Nitrates are nitrogen-oxygen chemical units that combine with various organic and inorganic compounds. They are essential nutrients for plants, which absorb them from soil. The excess nitrates not used by the plants are carried through the soil to groundwater in a process called “leaching.” Once in water, they remain there until used by plants or organisms.

What are sources of nitrates?

The greatest source of nitrates is fertilizers used to provide nitrates to crops. Animal and human waste also contains nitrogen in the form of ammonia. Decomposing plant and animal materials also generate nitrates.

Why should I be concerned about nitrates?

The U.S. Environmental Protection Agency has a maximum contaminant level for nitrates at 10 parts per million. High levels of nitrates can cause health problems, including methemoglobinemia, commonly known as “blue baby syndrome.”

In blue baby syndrome, nitrates are reduced to nitrites in an infant's stomach. When the nitrites enter the bloodstream, they interfere with the blood's ability to carry oxygen to body tissues. This can be an acute condition in which the baby's health deteriorates rapidly in a span of a few days. It can cause shortness of breath, increased susceptibility to illness, heart attacks, and even death by asphyxiation. Older children and adults can withstand higher levels of nitrates than babies because of stronger stomach acids that kill the bacteria.

However, there have been reports that nitrates could potentially be linked to gastrointestinal cancer. The EPA says that long-term exposure to water above the maximum contaminant level can cause diuresis, increased starchy deposits, and hemorrhaging of the spleen.

How can nitrates reach my private water supply?

Nitrates are very soluble and do not bind with soil, so the potential is high for them to migrate to groundwater. This is especially true if your water well system is near agricultural land or animal feedlots. Incidents such as heavy rains, flooding, chemical spills, or failed sewage systems can cause nitrates to enter soil near your private water well, too.

How can I tell if my water has nitrates in it?

The one way to know for sure is to have your water tested because nitrates are tasteless and odorless. Always use a professional groundwater contractor to test your water supply.

Will boiling water get rid of nitrates or lower nitrate levels to a safe amount?

No, because nitrates don't evaporate. In fact, boiling will increase the concentration of nitrates in water.

What can be done if nitrates are in my water?

Water containing nitrates can be treated by a variety of methods. The EPA has approved certain methods for removing nitrates and nitrites, including reverse osmosis and ion exchange.

Reverse osmosis or a disposable mixed-bed deionizer work best on point-of-use systems (installed in places such as the kitchen sink where water is used mostly for drinking or cooking). Ion exchange, along with a water softening system, can provide a whole-house solution for nitrate contamination.

Where can I get more information?

For more information on your private water well, contact your local contractor. Also, visit the website of the National Ground Water Association, www.ngwa.org, and its site just for well owners, www.wellowner.org.