

It's **YOUR** Health!



VDH's Office of Environmental Health Services has developed the "It's YOUR Health" information program to help private system owners with the educational, emergency, and service provider information needed to safeguard wells and septic systems so that they remain protective of human health and the environment. Because it's YOUR health!

Private well owners are responsible for all water quality sampling before and after the well is approved. Please keep the following in mind when determining whether you should test your private well water supply for nitrate.

Sources

Nitrate is a compound that is formed naturally when nitrogen combines with oxygen or ozone. Nitrogen is essential for all living things, but high levels of nitrate in drinking water can be dangerous to health, especially for infants and pregnant women. Nitrates are also made in large amounts by plants and animals, and are released in smoke and industrial or automotive exhaust.

Nitrate can occur naturally in surface and groundwater at a level that does not generally cause health problems. High levels of nitrate in well water often result from improper well construction, well location, overuse of chemical fertilizers, or improper disposal of human and animal waste. Sources of nitrate that can enter your well include fertilizers, septic systems, animal feedlots, industrial waste, and food processing waste. Wells may be more vulnerable to such contamination after flooding, particularly if the wells are shallow, have been dug or bored, or have been submerged by floodwater for long periods of time.

Source: CDC

Health Risks Associated with Nitrate

Exposure to high levels of nitrite can cause methemoglobinemia, a change to hemoglobin that decreases its ability to transport oxygen to tissues and related symptoms such as decreased blood pressure, increased heart rate, headaches, abdominal cramps, vomiting, and even death. The International Agency for Research on Cancer (IARC) noted that the presence of nitrite and some types of amines or amides in the acid environment of the stomach may result in the production of some cancercausing N-nitroso compounds; under these conditions, IARC determined that ingested nitrate and nitrite is probably carcinogenic to humans. The EPA has not classified nitrate or nitrite for carcinogenicity.

Children can experience the same effects as adults from overexposure to nitrate or nitrite. Young infants (less than 6 months) appeared to be particularly sensitive to the effects of nitrite on hemoglobin after consuming formula prepared with drinking water that contained nitrate at levels higher than recommended limits; some of these infants died.

Source: ATSDR

What Can You Do If You Find Nitrate in Your Private Well Supply

Heating or boiling your water WILL NOT remove nitrate. Because some of the water will evaporate during the boiling process, the nitrate levels of water can actually increase slightly in concentration if the water is boiled. Mechanical filters or chemical disinfection, such as chlorination, DO NOT remove nitrate from water.

Nitrate may be successfully removed from water using treatment processes such as ion exchange, distillation, and reverse osmosis.

Source: CDC

LINKS for Further Information

[National Groundwater Association](#)

[Virginia Household Water Quality Program](#)

[Center for Disease Control: Nitrate and Drinking Water from Private Wells](#)