NITRATE/NITRITE IN PRIVATE WATER WELLS FREQUENTLY ASKED QUESTIONS

Kansas Department of Agriculture | Kansas Department of Health and Environment | Kansas Water Office

Q: What are the sources of nitrate in water wells?

A: In nature, plants utilize nitrate as an essential nutrient. In commerce, the majority of nitrate is used in inorganic fertilizers. Nitrate and nitrite are also used in food preservation, some pharmaceutical drugs, and the production of munitions and explosives. Animal wastes and nitrogen-containing fertilizers increase concentrations of nitrate in the environment. The most vulnerable wells are those in farm communities or areas with large numbers of aging septic tanks.

Q: What are the potential health effects from drinking water containing nitrate?

A: Some adults who ingest high levels of nitrate and nitrite experience a decreased ability for blood to carry oxygen to tissues, drops in blood pressure, increased heart rate, headaches, abdominal cramps and vomiting. Whether this contaminant will have an impact on your health or the health of your family will depend on a number of factors including how high the concentrations are, how long you have been exposed to contaminated water, and whether you were exposed by drinking, breathing in, or touching contaminated water. Whether or not a person develops health effects will also depend on a number of other factors including diet, lifestyle, general health status, smoking status, and exposures to other contaminants. If you are concerned, you should talk to your health care provider and develop a plan for screening.

Q: What levels are considered acceptable for nitrate found in water wells?

A: The United States Environmental Protection Agency's (EPA) maximum limit for nitrate in drinking water is 10 milligrams per liter (mg/L), or 10 parts per million (ppm); for nitrite, the limit is 1 ppm. The sum of the amount of nitrate and nitrite in drinking water should not total more than 10 ppm. For more information on how this contaminant level was developed please, refer to EPA's Federal Register 40 CFR Parts 141, 142, and 143 National Primary Drinking Water Regulations; Synthetic Organic Chemicals and Inorganic Chemicals; Final Rule: https://www.govinfo.gov/content/pkg/FR-1991-01-30/pdf/FR-1991-01-30.pdf.

Q: Should I test my private water well for nitrate?

A: If you use your private well for drinking water purposes you should have your well tested. You can contact your local KDHE district office to ask for assistance in sample collection and testing (http://www.kdheks.gov/befs/dist_office.html). Additionally, you can go to KDHE's Private Water Well website http://www.kdheks.gov/wellwateraware/local_resource_map.htm to access contact information for certified water well testing labs, sampling protocols, testing procedures and guidance documents.

Q: What if my test shows elevated levels of nitrate in my private well? How do you treat it and what are the costs?

A: Three methods for removing nitrate from drinking water include distillation, reverse osmosis and anion exchange. Please visit https://www.watersystemscouncil.org/download/wellcare_information_sheets/well_water_testing_&_treatment_information_sheets/DrinkingWaterTreatmentsandCostsFINAL.pdf for more information on treatment for homeowners, including estimated treatment costs. Although there are no distillation or anion exchange devices currently certified for nitrate reduction, there are several reverse osmosis systems certified for nitrate removal. You can get the complete list of the NSF (National Sanitation Foundation) International certified nitrate removal systems here: http://info.nsf.org/Certified/DWTU/Listings.asp?ProductFunction=058%7CNitrate%2FNitrite+Reduction&.

Q: Are the public water supplies in my community safe?

A: Yes. The Safe Drinking Water Act (SDWA) authorizes and permits EPA to set national standards for drinking water contaminants. Through the Kansas Department of Health and Environment all public water supply systems are required to monitor and comply with those standards.

Q: Are there ways to mitigate the health impacts for people who have been consuming contaminated water for a long period of time?

A: Whether this contaminant will have an impact on your health or the health of your family will depend on several factors including how high the concentrations are, how long you have been exposed to contaminated water, and whether you were exposed by drinking, breathing in, or touching contaminated water. Whether or not a person develops health effects will also depend on a number of other factors including diet, lifestyle, general health status, smoking status, and exposures to other contaminants. If you are concerned, you should talk to your health care provider about all of these factors and develop a plan for screening.

Q: If livestock drink contaminated water is the meat or milk contaminated?

A: The brevity of lifetime for cattle limits the time for any mineral residue buildup. There are no studies that show a mineral buildup in the meat or milk.

Q: If root vegetables are grown in areas with soil or water contamination is it safe to eat?

A: The brevity of lifetime for plants limits the time for any mineral residue buildup. Generally, if the amount measured in soil and water used to grow produce is low, the amount deposited in the produce would likely fall below the detection limits.

Sources:

- Agency for Toxic Substances and Disease Registry. 2015. Nitrate/Nitrite ToxFAQs™. Available at https://www.atsdr.cdc.gov/toxfaqs/tfacts204.pdf. Accessed on July 13, 2019.
- Kansas State University Extension. 1999. MF857 Nitrate and Groundwater. Available at https://www.bookstore.ksre.ksu.edu/pubs/MF857.pdf. Accessed on July 13, 2019.