

FactSheet

Para Su Información

Nitrate and Ground Water

What is nitrate?

Nitrate is a form of nitrogen, an element whose compounds are vital components of foods and fertilizers. It is tasteless, odorless and colorless and comes from various sources such as plants and other organic matter, which return nitrate to the soil as they decompose. Septic sewer systems, waste from animal feedlots and the application of nitrogen-based fertilizers also discharge nitrates into the environment.

What happens to nitrate when it gets into the environment?

Nitrate that is not used by plants for growth can build up in and move through soil. Precipitation, irrigation and sandy soils allow nitrate to move around and find its way into surface water and ground water.

Why is nitrate in ground water a concern?

Ground water wells supply a large portion of the drinking water for Clark County residents. High levels of nitrate in drinking water are associated with adverse health effects.

How can nitrate affect my health or my child's health?

People may be exposed to nitrate in both food and water. In healthy adults and older children, ingested nitrate is excreted rapidly in the urine. Exposure to fairly large amounts of nitrate is not usually associated with short-term adverse effects. Infants younger than six months of age, however, are sensitive to nitrate poisoning, which may result in serious illness or death. The illness occurs when nitrate is converted to nitrite in a child's body. Nitrite reduces oxygen in the child's blood, causing shortness of breath and blueness of the skin, hence

the name "blue baby syndrome." The technical term for this condition is "methemoglobinemia." This illness can cause a child's health to deteriorate rapidly over a period of days.

Long-term: Nitrates and nitrites have the potential to cause the following effects from a lifetime exposure at levels above the maximum contaminant level (MCL): diuresis, increased starchy deposits and hemorrhaging of the spleen.

How is nitrate in ground water regulated?

The U.S. Environmental Protection Agency (EPA) has established a federal drinking water standard MCL of 10 milligrams per liter (mg/L) or 10 parts per million (ppm) for nitrate. The Nevada ground water quality standard is also 10 mg/L. Public Water Systems (PWS) are required to sample for various contaminants including nitrate, on a regular basis. There is no required sampling of domestic wells. However, the Southern Nevada Health District (SNHD) recommends that owners test their wells for nitrate on a regular basis.

How do I find out if my well is contaminated with nitrate?

Nitrate is tasteless, odorless and colorless. To find out if there is nitrate in your domestic well water, have it tested by a laboratory certified for nitrate testing by the State of Nevada. Laboratories will provide sampling bottles and instructions. Contact SNHD or look in the Yellow Pages under "Laboratories – Analytical or Testing" for a certified laboratory serving your area. It is a good idea to have a routine nitrate test at least once a year. You should also have your water tested for nitrate if you are a woman planning on becoming pregnant or if infants will be using the water.

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What if nitrate is found in my water?

If the nitrate concentration exceeds the MCL of 10 mg/L, do not give the water to any infant under six months of age, either directly or in formula. Infants should be provided with water from a source that has been tested and shown to be low in nitrate. Commercially bottled water is required to meet the nitrate standard and is safe for infants. Do not boil high nitrate water to “treat” it. Although it is common to think of boiling, softening or filtering as a means of purifying water, none of these methods reduce nitrate contamination. Boiling actually concentrates the nitrate due to evaporation of the water. While reverse osmosis units can be used to remove nitrates from your water, home water treatment units are not recommended for treating high nitrate water that will be given to infants. There is no foolproof way of knowing when the treatment system may fail and blue baby syndrome has been known to occur after just one day of exposure to high nitrate water.

It is a good idea to have the well inspected by a licensed well contractor if the well is old or if you do not know whether it is structurally sound. Nitrate problems are sometimes caused by structural flaws, which allow contaminated surface water to enter the well. Repairing the well may result in a significant reduction of the nitrate level. To find licensed well drillers in your area, look in the Yellow Pages under “Water Well Drilling and Service.”

Identify and remove sources of nitrate near the well. Fertilizers, animal wastes and sewage systems should be located and managed so that they do not contaminate the well. Septic sewage systems can fail if the tank or leach field is damaged. The tank or leach field can be damaged by driving over it or planting trees in or very near it. The leach field can be damaged by covering it with a nonporous material like plastic sheeting or concrete and it can be damaged by exceeding its liquid capacity for a long period of time due to a malfunctioning water softener or a leaking toilet flush tank valve. This type of failure can usually be identified by a wet area and odor over the leach field. Repairing the leach field will often reduce the nitrates to a safe level in the drinking water.

For more information

Contact Bill Lynn, Environmental Health Specialist II at the Southern Nevada Health District, (702) 759-0608 or by email at Lynn@snhdmail.org or contact the EPA at www.epa.gov/safewater/.



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