

GOLDEN VALLEY WELL OWNERS NEWSLETTER

Keeping citizens informed and involved



Department of
Water Resources

Quick Facts!

- 1 **Concerns about nitrate in drinking water have been raised in Golden Valley**
- 2 **High nitrate levels in water can cause blue baby syndrome, a condition found especially in infants under six months of age**
- 3 **No federal drinking water standards exist for privately owned domestic-use water wells. You are responsible for the safety of the drinking water from your well.**
- 4 **Nitrate is a colorless, odorless, and tasteless compound**
- 5 **Septic systems and naturally-occurring soil nitrate are the main reasons for high nitrate in groundwater in Washoe County**
- 6 **Do not attempt to remove the nitrate by boiling the water. This will only concentrate the nitrate, making levels even higher.**

Golden Valley Artificial Recharge Project Update

In response to declining water levels in Golden Valley, residents requested the Washoe County Department of Water Resources (DWR) implement an aquifer recharge program to stabilize the declining groundwater. At present, approximately 80 acre feet (or about 19.5 million gallons) of water is injected into the aquifer each year. The injected water has helped slow the rate of water level decline, and in some areas the water levels have increased.

In addition to stabilizing groundwater declines, the groundwater injection program had the added benefit of improving groundwater quality in some areas, with respect to nitrate. The addition of the injected water dilutes the groundwater, thereby lowering nitrate levels. Monitoring of nitrate levels in one of the monitoring wells installed for the recharge project indicates that the nitrate levels change seasonally, but in general, have shown an overall decreasing trend from about 16 milligrams per liter (mg/L) of water in 2003 to 9.7 mg/L in 2010. This level of groundwater quality improvement has not been observed in all areas of Golden Valley. It may take many more years of injection to observe a decreasing trend throughout the area, as groundwater movement is slow and it simply takes time to observe changes.

Well owners are responsible for the safety of the drinking water from their wells. So, it is important for Golden Valley well owners to be aware of the causes and potential health affects of high nitrate levels.

What is Nitrate?

Nitrate is one of the most common contaminants found in groundwater. Nitrate in low concentrations is a necessary nutrient for plants, but at high concentrations can affect human health. High nitrate concentrations in drinking water have been shown to cause blue-baby syndrome in infants and possibly other health concerns.

Nitrate is a federally regulated drinking water contaminant. The U.S. Environmental Protection Agency (USEPA) sets the standards for water quality regulations under the Safe Drinking Water Act (SDWA). The SDWA defines the maximum contaminant level (MCL) as the levels above which adverse human health effects may occur. **The MCL for nitrate in drinking water is set at 10 mg/L.** This MCL may only be enforced on public drinking water; household domestic wells are not regulated. Therefore, no federal drinking water standards exist for privately owned domestic-use water wells. You are responsible for the safety of the drinking water from your well.

Where does Nitrate come from?

Although nitrate can come from many sources, recent work has identified septic systems and naturally-occurring soil nitrate as the main reasons for high nitrate in groundwater in Golden Valley. Septic systems are not designed to prevent the contamination of groundwater. They are a temporary wastewater solution until a more permanent solution (community sewer) is available. The average lifespan of a septic system is 20 years. The purpose of a septic system is to collect domestic wastewater, convert harmful human wastes to nitrate, and discharge the wastewater which eventually reaches groundwater. Recent work by the Washoe County Department of Water Resources has found that household septic systems discharge about 200 gallons per day per house of wastewater to groundwater. Levels of nitrate in the wastewater are approximately 44 mg/L.

Nitrate levels in Golden Valley Groundwater

Testing of groundwater in the Golden Valley area detected nitrate levels in domestic wells ranging between 2.8 mg/L and 17.3 mg/L in 2007.

North Valleys High School and Alice Smith elementary schools are served by a public water system. Therefore, the water has very low levels of nitrate, well below the federal standard of 10 mg/L.

Do not give contaminated well water to infants less than six months of age or use the water to prepare infant formula.

Do not attempt to remove the nitrate by boiling the water. This will only concentrate the nitrate, making levels even higher.

**Have your well water chemically tested annually.
Have your septic system pumped at least every four years.**

What should I do if my well tests high in nitrate?

When laboratory tests determine that well water contains more than 10 mg/L nitrate, the following are recommended:

- Do not give the well water to infants less than six months of age or use the water to prepare infant formula.
- Avoid drinking the well water on a daily basis during pregnancy.
- Do not attempt to remove the nitrate by boiling the well water. This will only concentrate the nitrate levels even higher.
- Seek medical help immediately if the skin of an infant appears bluish or gray in color. Sometimes the color change is first noticed around the mouth or on the hands and feet.
- Identify the nitrate source and take action to reduce contamination.
- Limit your daily intake of well water if you have chronic health problems that increase your sensitivity to nitrate.

What can be done to remove nitrate?

There is no simple way to remove nitrate from your water. Finding and correcting the source of nitrate contamination is the best course of action. Septic systems are the main cause of high nitrate levels in groundwater in Washoe County. To prevent increased contamination, septic systems should be maintained annually and pumped out or serviced at least every four years. Septic system maintenance contractors can be found in the yellow pages under "Septic".

Nitrate can be removed from drinking water by three methods: distillation, reverse osmosis, and ion exchange. Home treatment equipment using these processes is available from several manufacturers. All of these methods may be relatively expensive. Consider both the initial cost and the operating costs. Operating costs include the energy needed to operate the system, additional water that may be needed for flushing the system, consumable supplies and filters, repairs, and general maintenance. Please note that carbon adsorption filters, mechanical filters of various types, and standard water softeners do not remove nitrate.

Water Quality Analysis

Nitrate is a tasteless, colorless, and odorless compound that you cannot detect unless your water is chemically analyzed. Have your well water tested at least once a year for total coliform bacteria and at least every three years for nitrate, pH, and total dissolved solids, also referred to as a "routine domestic water analysis". Shallow wells (100 feet or less) should be tested annually for nitrate. Do NOT rely on your neighbor's water well test for information. Nearby wells can sometimes have very different water quality depending on construction of the well, geology, depth, and other factors. A list of certified labs serving Washoe County can be found by logging on to the Nevada division of Environmental Protections' Web site at:

<http://ndep.nv.gov/bwqp/lab/labservice.htm>

Additional Resources

For more information on protecting the quality of your private domestic well water, you can log on to the University of Nevada's Cooperative Extension Web site at:
www.unce.unr.edu