



NITRATE FAST FACTS

- Nitrate (NO₃) is a compound formed from the decomposition of plants and animal wastes.
- Fertilizers are high in nitrate because it is essential to plant growth.
- Excess nitrate can runoff and seep into groundwater, affecting the quality of our water sources.
- Nitrate can be a health concern when concentrations in groundwater are higher than the MCL of 45 mg/L as nitrate and 10 mg/L as nitrogen.
- The State Water Board recommends that domestic well owners sample and test their well annually to protect their drinking water supply.
- Maintaining a zone of protection around your well can guard against chemicals and wastes that can seep into your groundwater near your well.
- If your repeated test results are high in nitrate (above the MCL), use an alternate source for drinking water. You may need to install a water treatment system or drill a new well that accesses clean groundwater.
- Boiling water does not remove nitrate.

WHAT IS NITRATE?

Nitrate is a compound of nitrogen and water, formed in the soil when nitrogen and oxygen combine. Nitrogen comes from the decomposition of organic materials like manure, plants, and human wastes. Since nitrogen is essential to plant growth, fertilizers high in nitrogen are often applied to improve lawns, landscapes, and agricultural crops. Fertilizers largely contribute to additional nitrate, as well as septic systems and animal waste.

HOW DOES NITRATE GET INTO MY WELL WATER?

Nitrate is water-soluble, and is carried through the soil by rain or irrigation water to groundwater. Excess nitrogen not used by plants can then leach into groundwater, affecting the quality of the sources of the water we drink. Improper well construction and not maintaining a zone of protection for the surface area around the well may also increase the risk of contamination to your well water.

DOES NITRATE POSE A HEALTH RISK?

Over 95% of Californians receive safe drinking water from their public water system. However, if your drinking water is supplied from a private water well, there is greater potential for nitrate contamination that can have harmful health effects. Nitrate can interfere with the blood's ability to transport oxygen. Infants below the age of six months who consume water above the maximum contaminant level (MCL) can become seriously ill with methemoglobinemia, or "blue baby syndrome." High nitrate levels may also affect the oxygen-carrying ability of the blood of pregnant women. Symptoms include shortness of breath and the appearance of blue skin from the lack of oxygen in the blood, and should be reported to a medical professional immediately. In general, the groups with the lowest risk of becoming ill are healthy children and adults.

WHAT IS THE SAFE LEVEL OF NITRATE IN MY DRINKING WATER?

Nitrate is a regulated drinking water contaminant. Public water systems are required to monitor water quality and take action to ensure water delivered to consumers meets drinking water standards for all regulated contaminants. A drinking water laboratory will report nitrate concentrations as milligrams per liter (mg/L) or as parts per million (ppm), (1 mg/L = 1 ppm), and report concentrations as the amount of nitrogen in the nitrate form (nitrate as nitrogen), or total nitrate, which have different MCLs. Be sure to check your test report for which quantity, NO₃-N or NO₃⁻, is reported. The MCL is 45 mg/L for nitrate as nitrate (NO₃) and 10 mg/L for nitrate as nitrogen (N).

DO I NEED TO TEST MY WATER FOR NITRATE?

If your water comes from a public water supply, such as a city or water company, it is tested regularly to ensure that it meets drinking water standards. If you are concerned about nitrate contamination in your well, the State Water Board recommends that you [sample your well](#) annually and have it tested by a [state-accredited](#) laboratory.

WATER BOARD PROGRAMS ADDRESSING NITRATE IN GROUNDWATER

Monitoring and Trends:

- Groundwater Ambient Monitoring and Assessment (GAMA) Program
 - Monitors aquifers used for domestic and public supply
 - Domestic Well Project sampling for well owners
- GeoTracker GAMA online groundwater information system

Regulatory:

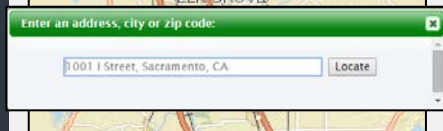
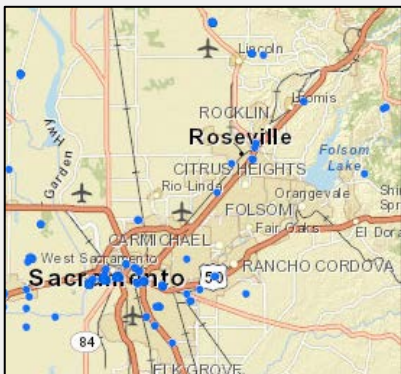
- Division of Drinking Water (formerly within the Dept. of Public Health)
 - Oversight for community water systems
 - Environmental Laboratory Accreditation
- Irrigated Lands Regulatory Program (ILRP)
 - Waste discharge requirements to minimize nitrate from agricultural sources

Planning:

- Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS)
 - Stakeholder process to find solutions for nitrate in the Central Valley
- Salt and Nutrient Management Plans (SNMPs)
 - Objectives for the management of nitrate

WHAT CAN I DO IF MY WATER IS HIGH IN NITRATE?

If the repeat test results are still above the MCL, continue using an alternate drinking water source and look into ways to fix the problem. You may want to consider installing [a water treatment system](#) or drilling a new well that taps a less contaminated aquifer. Boiling your water does not remove nitrate.



IS MY PROPERTY NEAR A NITRATE-IMPACTED WELL?

For your information, the [online map interface](#) displays the location of wells with known test results above the nitrate MCLs. The blue dots on the map represent publicly-accessible water well data with the most recent detection of nitrate above the MCL, since 2000. Additionally, this interface allows you to enter an address to see if a nitrate-impacted well is within 2,000 feet of you.

HOW CAN I PROTECT MY WELL FROM NITRATE?

It is important to remember that you are living above your drinking water. Therefore, if you do not want to drink it, do not put it on the ground! The State Water Board recommends that you create a zone of protection around your well and avoid storing, spraying, burying, dumping, or spilling chemicals or other substances within 50 feet of your well. Avoid housing your animals near your well, as their waste can also contaminate your drinking water. Install your septic tank and leach field at least 100 feet away and downgradient from your well.

For your resource, [the well owner guide](#) further explains the above topics in more detail.

WHERE CAN I OBTAIN WELL WATER QUALITY DATA?

The State Water Board GAMA Program developed an online, publicly accessible groundwater information system, [GeoTracker GAMA](#). Several groundwater quality databases are centralized and standardized to make all data searchable, while providing enhanced tools for the simplest or most complex queries. Data is also available for download.

QUESTIONS?

Contact State Water Board Division of Water Quality:

Dori Bellan – 916.341.5502
Aaron Button – 916.341.5577