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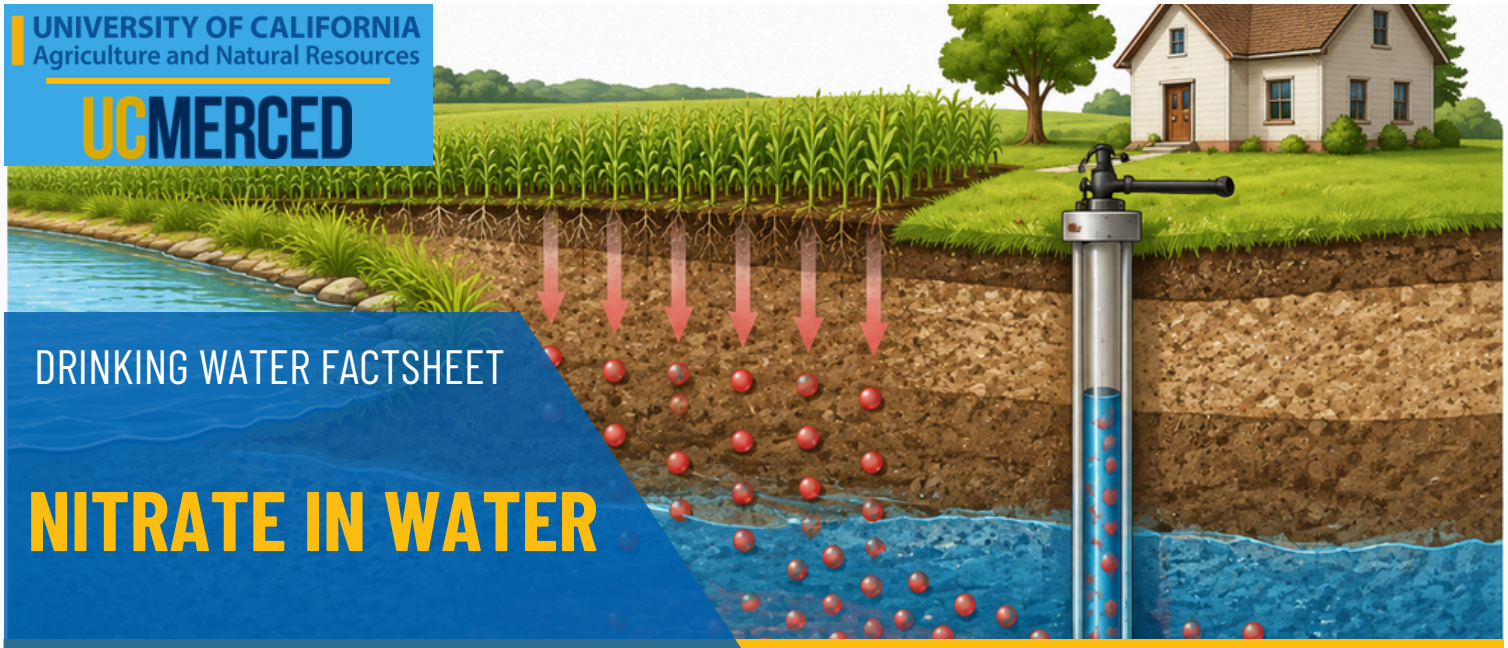

DRINKING WATER FACTSHEET

NITRATE IN WATER

Factsheet Drinking Water Series - #4

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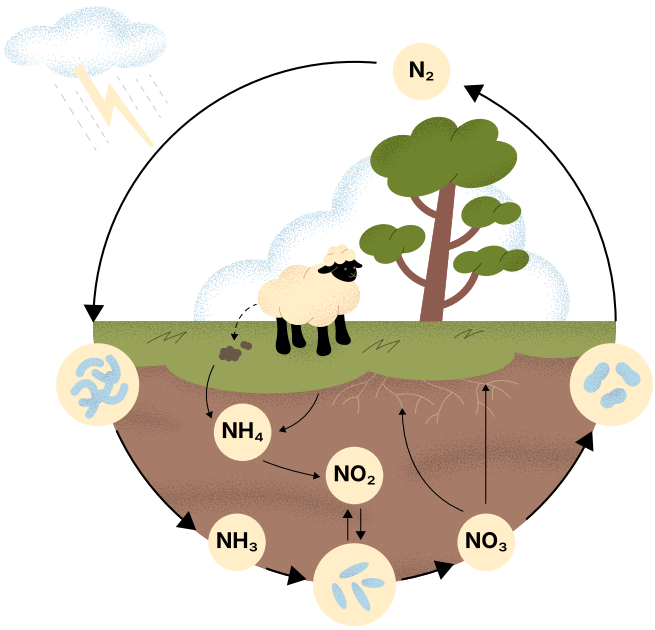
What is Nitrogen?

Nitrogen is a natural and essential element for life. It helps plants grow, supports healthy soils, and is part of the proteins needed by all living organisms. In nature, nitrogen moves through the environment as part of the nitrogen cycle. One of its common forms is nitrate, which occurs naturally at low levels and is a normal part of this cycle. Nitrate (NO_3^-) is a form of nitrogen that dissolves easily in water and can move through soil into groundwater.



When is Nitrate a Problem?

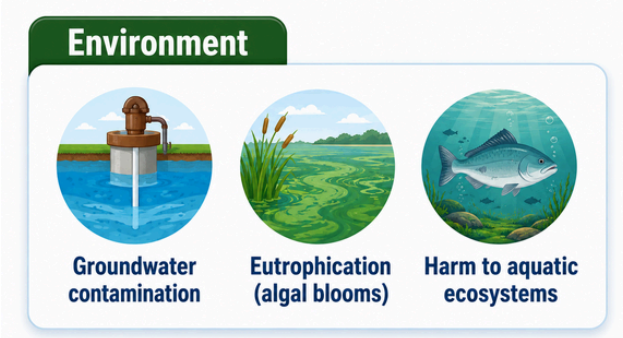
Forms of nitrogen become a problem when too much enters the environment from human activities. Fertilizer use, dairy manure, wastewater, septic systems, and leaking sewer lines can add more nitrogen than plants and soils can absorb. Because nitrate dissolves easily in water, it can move downward through soil and into groundwater. Once it reaches groundwater, it can remain there for years or even decades, making contamination difficult to reverse.

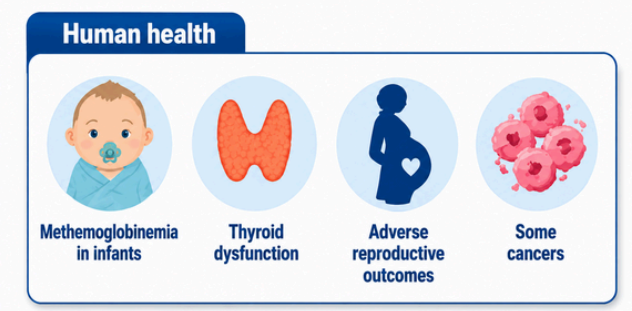
Where is the Main Problem?

Nitrate can affect both surface water and groundwater. In surface water, it can contribute to algal blooms, while in groundwater it is a major concern in California, especially in rural areas where more than 300,000 domestic wells and many small water systems provide drinking water, particularly in heavily farmed regions such as the San Joaquin and Salinas valleys.

Why Does it Matter?

High nitrate concentrations in water are most clearly linked to methemoglobinemia in infants, but the scientific literature also reports potential associations with thyroid dysfunction, adverse reproductive outcomes, and some cancers. Environmentally, excess nitrate contributes to long-term groundwater contamination, eutrophication, and harm to aquatic ecosystems.





What Can People Do?

- **Test private well water** regularly, especially in rural and agricultural areas, at least once a year.
- **Do not boil water** to remove nitrate, since boiling can increase nitrate concentration.
- **Do not prepare infant formula** with contaminated water.
- **Maintain septic systems** and repair them promptly when signs of failure appear.
- **Keep manure, septic systems,** and other potential sources of contamination away from wells.

- **If nitrate is detected,** use an appropriate treatment method, such as reverse osmosis or ion exchange, or switch to a safe alternative water source.

Nitrate is invisible, tasteless, and odorless.
Testing is the only way to know if your water is safe.

Is My Property Near a Nitrate Impacted Water Well?

This interactive mapping tool is designed for private domestic well owners who want to explore whether their property is located near wells with reported nitrate impacts. Enter your address or point of interest in the search bar to locate your property and view nearby well information.

The map can help identify areas where nitrate has been detected, but nearby results do not determine the nitrate level in your own well. Testing your well water is the only way to know its nitrate concentration.

(State Water Board GAMA Program and the U.S. Geological Survey, 2026)