



Nitrate Fact Sheet

CALIFORNIA DEPARTMENT OF PUBLIC HEALTH

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What are nitrates?

Nitrates can be found in drinking water supplies. Their presence in groundwater is generally associated with septic systems, confined animal feeding operations or fertilizer use. These sources of nitrate contamination are more associated with rural settings, and are often subjects of drinking water source protection programs.

Nitrates are also present in treated wastewater, and as such can be present in surface water, or in treated wastewater used in groundwater recharge projects. These sources can pose risks to urban drinking water supplies. Nitrates are also used in industry, for example, in the production of fertilizers and explosives.

What are nitrites/what is the difference between nitrates and nitrites?

Nitrite is a chemical similar to nitrate, differing only slightly in its chemical structure. Nitrite comes from the same sources as nitrate. Once consumed, nitrate is converted into nitrite in the body.

What's the health concern about nitrate/nitrite in drinking water?

Nitrite can interfere with the ability of red blood cells to carry oxygen to the tissues of the body, producing a condition called methemoglobinemia. It is of greatest concern in infants, whose immature stomach environment enables conversion of nitrate to nitrite, which is then absorbed into the blood stream. Clinical effects on infants ingesting nitrite at high levels in foods or from formula made with nitrate-contaminated drinking water are often referred to as the "blue baby syndrome." High nitrate levels may also affect the oxygen-carrying ability of the blood of pregnant women. The groups with the greatest risk of becoming ill through ingesting nitrate are infants under 6 months and pregnant women. In general, the groups with the lowest risk of becoming ill are healthy children and adults.

Can nitrate contaminated water be used to shower or to bathe babies and children?

Yes. Babies and children can be bathed in water contaminated with nitrate. Showers may also be taken. Nitrate is only a concern for ingestion (eating and drinking). It is not absorbed through your skin. People who install filter systems for nitrate often install them just for their kitchen sink faucet, and they use that faucet for their cooking and drinking water.

Can water that exceeds the Maximum Contaminant Level for nitrate be used to wash fruits and vegetables before they are eaten?

Generally, fruits and vegetables can be washed with water that exceeds the nitrate MCL. The amount of water used for this purpose is small, and if the fruits and vegetables are wiped or blotted dry after washing, there should be no health risk. It is not recommended that the water be used for cooking.

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What is the Maximum Contaminant Level (MCL) for nitrate in drinking water?

The MCLs, in 22 CCR §63341, are 45 milligrams per liter (mg/L) for nitrate as NO₃ (equivalent to 10 mg/L for nitrate as nitrogen or “N”); 10 mg/L for nitrate plus nitrite as N; and 1 mg/L for nitrite as N.

Where's nitrate been found in drinking water in California?

Nitrate in drinking water is widespread in numerous areas of the country. About 98% of the population served by all community drinking water systems in California uses drinking water that meets health-based standards.

Public water systems, because they are regulated by the state, (unlike private wells), are required to analyze for nitrates and report the results to CDPH.

What is CDPH doing about this issue?

- CDPH provides funding opportunities and technical support for public water systems. The funding opportunities for water systems (for nitrate-related projects under Proposition 84, Proposition 50 and the Safe Drinking Water State Revolving Fund) can be found on the CDPH website at www.cdph.ca.gov/certlic/drinkingwater/Pages/DWPFunding.aspx.
- CDPH regulates and collects reports of nitrate testing, as provided to them by public water systems.
- CDPH takes enforcement actions against Public Water Systems that fail to provide safe water to their customers
- CDPH is posting a list of labs it certifies that can analyze the samples for nitrate in drinking water.

What about water from private wells?

Private wells are not subject to drinking water regulation by CDPH. However, the MCLs can be used for guidance.

What can consumers do to reduce their exposure to nitrates/nitrites in drinking water?

- Individuals concerned about levels of nitrate in drinking water should have samples analyzed by a certified lab.
- CDPH is posting a list of labs it certifies that can analyze the samples for nitrate in drinking water. Your local public water system can refer you to the closest certified lab.
- Drinking water may be treated to remove nitrate through anion exchange or reverse osmosis.
- Blending affected water with unaffected water may also reduce nitrate levels.
- Boiling water is not a solution for nitrate in water, as it can concentrate the nitrate level.
- Avoid making infant formula with drinking water that contains nitrate at levels above the MCL.

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