Frequently Asked Questions About Nitrates and Drinking Water

General

What is nitrate?

Nitrate (NO3-) is a form of nitrogen. It is a natural part of soil and groundwater. In some areas of the country, human activities (such as fertilizer use and manure applications, failing or improperly discharging septic systems, food processing waste, etc.) have increased nitrate concentrations in drinking water to levels above EPA's drinking water standard. EPA's drinking water standard for nitrate is 10 milligrams per liter (mg/L) or 10 parts per million (ppm).

What does "parts per million" mean?

"Parts per million" (ppm) is a measure of the concentration of a substance (such as nitrate) in water. As an example, let's say a bucket of water has nitrate in it at a level of 14 parts per million (or mg/L). If the bucket of water had a million drops of water in it, 14 of those drops would be nitrate and the rest of the drops would be water.

Why is nitrate contamination a concern?

Nitrate is an acute contaminant, meaning that one exposure can affect a person's health. Too much nitrate in your body makes it harder for red blood cells to carry oxygen, causing an illness called acute methemoglobinemia. The primary source of exposure to nitrate is food, though water can sometime be a concern.

While most people recover quickly from exposure to high levels of nitrate, it can be very dangerous for infants below the age of six months and potentially dangerous for some adults, such as pregnant women and those taking certain medications. Infants exposed to high amounts of nitrate may develop shortness of breath and "blue baby syndrome." This illness is rare, but it can be fatal. Infants may be especially vulnerable if they are fed with formula mixed with well water that has a high nitrate concentration (exceeding 10 ppm).

Research on other health effects of nitrate in humans has been inconclusive.

How can nitrate get into my drinking water?

When products containing nitrogen, such as fertilizer or manure, are applied to land, natural bacteria living in the soil can change nitrogen into nitrate. Human waste from septic systems can also be a source of nitrate. Water from rain or irrigation can then carry the nitrates into groundwater or rivers that are used for a city's water supply. The primary source of human exposure to nitrate, however, is through food.

What should I do if my drinking water is contaminated with nitrate?

The maximum contaminant level, or EPA's drinking water standard, for nitrate is 10 milligrams per liter (mg/L), which is the same thing as 10 parts per million (ppm).

If a nitrate test shows levels higher than 10 ppm, you should find a safe, alternate drinking water supply. The quickest thing to do is to begin using bottled water for drinking.

Individuals who receive their water by on-site wells should get their water tested annually to assess nitrate levels.

Is it safe to shower or bathe in my tap water if it is contaminated with nitrate?

Nitrate is only a concern for ingestion (eating and drinking). It is not absorbed through your skin.

Should I use bottled water if my tap water is contaminated with nitrate?

Yes. Unless you have a reverse osmosis or distillation system installed in your home to treat your tap water, bottled water is the only water that is safe to drink at this time until further notice. Bottled water is available at [insert locations].

Will boiling my tap water help if it is contaminated with nitrate?

No. Boiling water will not reduce nitrate levels. In fact, it could make the level of nitrate slightly higher because some of the water will evaporate but the nitrate will not.

Can I disinfect my tap water to make it safe to drink if it is contaminated with nitrate?

No. Nitrates are chemicals, not germs that can be "killed", so disinfecting your water will not make it safe to drink.

Food and Beverages

Can I use my coffee maker, ice machine, water dispenser, or soda dispenser if my tap water is contaminated with nitrate?

No. Unless you have a reverse osmosis or distillation system installed in your home to treat your tap water, do not use water from any appliance connected to your water lines. This includes the water and ice dispensers in your refrigerator/freezer and dishwasher. If your appliance is not connected to your water line (e.g., a free standing coffee maker), you can use it, but use bottled water in place of tap water.

When the water advisory is lifted, consult the owner's manual to find out how to flush the old water out and sanitize appliances.

Can I use ice from my refrigerator/freezer if my tap water is contaminated with nitrate?

No. Unless you have a reverse osmosis or distillation system installed in your home to treat your tap water, do not use ice or water from your refrigerator or freezer and throw out all ice previously made with tap water.

Can I use tap water to cook food (such as pasta, rice, etc.) if it is contaminated with nitrate?

No. Unless you have a reverse osmosis or distillation system installed in your home to treat your tap water, bottled water should be used for food preparation until you receive updated instruction from local officials.

What should I do about preparing food and beverages? How should I wash fruit, vegetables, and food preparation surfaces?

Unless you have a reverse osmosis or distillation system installed in your home to treat your tap water, follow the instructions below:

- Wash fruits and vegetables with bottled water.
- Prepare drinks, such as coffee, tea, and lemonade with bottled water.
- Wash food preparation surfaces with bottled water.

What should I do about feeding my baby if my tap water is contaminated with nitrate?

Breastfeeding is best. Continue to breastfeed. If breastfeeding is not an option:

- Use ready-to-use baby formula, if possible.
- Prepare powdered or concentrated baby formula with bottled water.
- Wash and sterilize bottles and nipples with bottled water before use.
- If you cannot sterilize bottles, try to use single-serve, ready-to-feed bottles.

If you have a reverse osmosis or distillation system installed in your home to treat your tap water, you may use your tap water to feed your baby as you normally would.

How do I wash dishes if my tap water is contaminated with nitrate?

Use disposable plates, cups, and utensils, if possible. If you do not have disposable dishes, wash dishes by hand using bottled water and dish soap.

Health

What should I do if already drank the tap water and it is contaminated with nitrate?

If you are concerned about your health or the health of a family member, contact your healthcare provider or [local health department].

While most people recover quickly from exposure to high levels of nitrate, it can be especially dangerous for infants. Infants below the age of six months who drink water containing nitrate over levels of 10 ppm could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue baby syndrome.

I use a carbon filter. Will this help tap water that is contaminated with nitrate?

No. Activated carbon filters, such as those typically found in a water pitcher or on your refrigerator, do not remove nitrates.

What about home filter systems?

Two types of systems that will remove nitrates from your water are:

- Reverse osmosis unit
- Distillation unit (not to be confused with boiling water)

These systems can either be installed on a single tap (called a Point of use [POU] filter system) or installed to treat all of the water entering the house (called a Point of entry [POE] filter system).

Important: All filter systems or treatment units need maintenance to operate effectively. If they are not maintained properly, contaminants may accumulate in the units and make your water worse.

In addition, some companies may make claims about the effectiveness of their water filter treatment units that are not based on science. Some organizations that test or certify water treatment units are:

- NSF International (**http://www.nsf.org**)
- Underwriters Laboratory (**http://www.ul.com**)
- Water Quality Association (**https://www.wqa.org/**)