



“Tip sheets helped us learn about our well water.”

Get Tip Sheets at www.riwelltesting.org:

- 14 Tip Sheets about harmful substances
- 10 Tip Sheets about treatment choices
- 3 Tip Sheets about other topics of concern

Well water is groundwater, meaning that it comes from the water stored in the earth and rocks below ground. Even though groundwater is *under* the surface, substances *on* the surface, such as gas from a lawnmower or animal waste, can seep down and pollute it. Some natural substances stored in rocks and soil can also affect the smell, taste, color, and safety of well water.

Nitrate and Nitrite in Drinking Water Wells

Nitrate and nitrite: Two forms of nitrogen that can cause health problems

Nitrogen is a chemical element present in nature and in our bodies. It is natural in groundwater, but usually at low levels that do not cause health problems. Nitrate and nitrite are two different forms of nitrogen.

When drinking water contains high levels of nitrate or nitrite, it can harm certain people, including babies, pregnant and nursing women, and older adults. High levels may result from the use of commercial fertilizers or from other substances that contain large amounts of nitrogen such as livestock, pet, or human waste.

What health problems can too much nitrate or nitrite cause?

The major problem is “blue baby syndrome” in which blood cannot bring enough oxygen to body cells and tissue. This can affect babies in the womb and then later, if breast feeding. Older adults may also be at greater risk.

Some studies show an increased chance of cancer from high levels of nitrates in drinking water and food. The United States government regulates the amount of nitrates in meat products to limit cancer risk.



How will I know if I have too much nitrate or nitrite in my well water?

You won't know unless you have your water tested. These elements have no smell or taste. And, your water will look the same as usual.

Use a State-certified water testing lab.

Find a list here: www.health.ri.gov/find/labs/drinkingwater.

Compare the numbers and letters on your lab test results with the standards (limits) set by the United States Environmental Protection Agency (EPA).

The EPA standard for nitrate and nitrite is a Maximum Contaminant Level (MCL). MCL is a water quality standard for substances that can harm health.

- **EPA limit (MCL) for nitrate:**
 - 10 mg/L (milligrams per liter)
 - 10 ppm (parts per million)
- **EPA limit (MCL) for nitrite:**
 - 1 mg/L (milligrams per liter)
 - 1 ppm (parts per million)

If the lab results show more than 5.0 milligrams per liter of nitrate, do not use the water for infant formula. Use bottled water and consider a home treatment system.

How do nitrates and nitrites get into well water?

Too much nitrogen can end up in groundwater and then well water from these sources:

- ▶ Commercial fertilizers applied to lawns, gardens, cropland, and playing fields
- ▶ Livestock manure
- ▶ Pet waste
- ▶ Septic systems
- ▶ Leaking sewers
- ▶ Compost facilities
- ▶ Other waste treatment systems

What can I do about too much nitrate or nitrite in my well water?

First, check around your well and yard to see if you can find and fix possible sources of the problem.

For example:

- Is there animal or compost waste near the well?
- Have you or close neighbors used commercial fertilizers on your lawns or gardens that might have soaked into the groundwater from heavy rains?
- Do you have a leaky septic or sewer system?
- Has the well been properly maintained? Is the cap on tight? Is the well casing tightly sealed?

Next, if you cannot find and fix the nitrogen source, you have these treatment choices:

- Using an alternate water supply such as bottled water, public water, or water from a new drilled well—drilled deeper or in a new location
- Installing a home treatment system to remove or reduce nitrates and nitrites. They include:
 - ▶ Distillation—Tip Sheet 20
 - ▶ Ion exchange—Tip Sheet 21
 - ▶ Reverse osmosis—Tip Sheet 24

Important: Before you install a treatment system, call us for expert advice. *Before* you buy a system, ask how it will be installed and whether this costs extra. Get at least 3 price quotes. Learn the questions to ask. See Tip Sheet 16. *After* you buy a system, be sure to:

1. Keep all the paperwork and directions.
2. Learn what you must do to maintain the system and do it.

Learn more

Get Tip Sheets about choosing and buying water treatment systems at www.riwelltesting.org.