

# Testing My Private Well Water: What's the Story?

by Adam Sigler and Jim Bauder  
Research Assistant and Professor, Respectively

This article is the first "Water Quality FAQ," a new online monthly series produced by the MSU Extension Water Quality Program.

**Why test my well water?**

**What to test for?**

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**How do I go about getting a test done?**

**When should I get my water tested and how often?**

## Why test my well water?

People on municipal water supplies have a vast set of people and resources in place to insure their water meets drinking water quality standards. Private well water supplies are not monitored by government or municipal agencies. This means the well owner must take responsibility for monitoring well water quality. In 1989-90, Montana State University Extension Water Quality offered a well test program for private well owners. In this study, nearly 40% of the water samples tested positive for coliform bacteria. The same study revealed that 1 in every 20 samples had nitrate levels higher than the EPA standard. Even if you do currently have good water quality, routine testing is a good idea because it establishes a water quality record. With a water quality record, if a contaminant problem develops it is easier to correlate to the cause.

## What to test for?

There is a broad range of potential chemical and biological groundwater contaminants which can find their way into your water supply. Testing for all of them would be extremely expensive. Fortunately, there are a couple of methods to help decide what you should test for. The first approach is to see if the water from your tap gives you any clues about contaminants. See Table 2 at the end of this document to guide you in this process. A second approach is to assess which contaminants your well is at highest risk from. Here are some questions to help guide you in making that determination.

**Table 1. Assessment of Potential Well Contaminants**

Questions Related to Land Use and Your Well	Contaminant Test to Consider
Do you live near a location where agriculture operations apply pesticides and/or fertilizers to plants and soil?	Pesticides and Nitrates (Pesticide testing is expensive, so knowing which pesticides have been applied is helpful in determining what tests to have done.)

Is your well up to date with current best engineering practices to prevent contaminants from entering groundwater through the well shaft?	Bacteria, Nitrates, and other chemicals in water that can reach your well head
Is your septic system located more than 50 ft from your well and the leach field more than 100 ft?	Bacteria and Nitrates
Is your septic system functioning properly and maintained at a regular interval?	Bacteria and Nitrates
Do you live in close proximity to any type of industrial site where chemicals are used?	Solvents, Petroleum Products and other contaminants depending on nature of industry
Do you know the history of land use in your area and could any of these land uses have left contaminants in the soil or water?	Contaminants associated with past land use (Apply the questions in this table to previous land uses for suggestions about which contaminants to test for.)

If you are not aware of any of these practices in your area, here is a list of some common contaminants which are a good baseline test.

- Coliforms (Bacteria)
- Nitrate/Nitrite (forms of Nitrogen)
- Total Dissolved Solids (salts)

Coliforms and nitrates are examples of “Primary” contaminants. This category of contaminant has drinking water standards set because of threats to human health. Total Dissolved Solids is an example of a “Secondary” contaminant. This category of contaminant has drinking water standards set because of aesthetic or cosmetic effects of water not directly related to health issues.

**Where can I get my water tested?**

Many commercial laboratories in Montana have the facilities to test water. Prices vary but will often be competitive with state labs. When obtaining laboratory services for water testing, look for three things:

1. Guidance with collecting samples
2. Analytical services available
3. Assistance with interpretation of results

The State of Montana requires certified labs to adhere to the State of Montana Drinking Water Certification requirements which have been adapted from the EPA Manual for the Certification of Laboratories Analyzing Drinking Water.

Check your phone book, contact your county sanitarian, or check the link below for Certified Montana Drinking Water Testing Labs in your area.

<http://waterquality.montana.edu/docs/homeowners.shtml>

**How do I go about getting a test done?**

After you have thought about what to test your water for, pick a lab from the sources above. Next contact the lab to find out about containers and shipping of samples. Most labs will send you sample bottles and instructions for free. If there is a lab in your area, you may want to transport the sample yourself to ensure timely delivery. Samples need to get to the lab quickly, preferably within 24 hours of collecting the sample.

**When should I get my water tested and how often?**

Generally, private water supplies should be tested for nitrate and bacterial contamination annually. Otherwise, drinking water should be tested if:

- you notice a change in your water quality.
- people using the water suffer from an illness which may be waterborne.
- there is a flood or large storm that may have carried contaminants to your wellhead.
- maintenance work is done on the well.
- a pregnant woman, woman anticipating pregnancy or an infant under the age of six months becomes a water user.

It is best to do coliform bacteria tests in the spring during wet weather. This is when bacteria are most likely to be found because runoff and excess soil moisture can carry contaminants into shallow groundwater sources or through well defects. Testing during dry weather or when the ground is frozen may not indicate the presence of bacteria because they are likely to be at lower concentrations under these conditions.

Test for other substances when specific contamination is suspected. This might be the result of a spill or backflow, use of harmful products in close proximity to the well, or other similar events. Any noticeable change in water taste, color, or smell signals the need for testing. Collect a water sample at a time when a contaminant is most likely to be present.

Problem or concern	Symptoms	Water test to consider
Appearance	Frothy, foamy	Detergents
Appearance	Black flakes	Manganese
Appearance	Brown, yellow, or reddish	Iron
Odor or taste	Rotten egg	Hydrogen sulfide
Odor or taste	Metallic	pH, iron, zinc, copper, lead

Odor or taste	Salty	Total dissolved solids, chloride, sodium, sulfates
Odor or taste	Septic, musty, or earthy	Coliform bacteria, iron
Odor or taste	Soapy	Surfactants, detergents
Odor or taste	Gasoline or oil	Hydrocarbon scan, volatile organic chemicals (VOC's)
Stains on fixtures or clothing	Red or brown	Iron
Stains on fixtures or clothing	Black	Manganese
Stains on fixtures or clothing	Green or blue	Copper
Stains on fixtures or clothing	Reddish-brown slime	Iron bacteria
Stains on fixtures or clothing	White deposits, soap scum	Hardness (calcium and magnesium)
Uses and symptoms	Discoloration of children's teeth	Fluoride
Uses and symptoms	Gastrointestinal illness	Coliform bacteria, sulfates, giardia
Uses and symptoms	Water supply used for infants less than six months old, pregnant or nursing women, or elderly with genetically impaired enzyme system	Nitrates
Corrosion	Pitting of plumbing fixtures and deposits on sinks and plumbing pipes.	Corrosivity, pH, lead, zinc, manganese, copper, iron, sulfates, chloride
If you suspect or observe:	Leaking fuel tank	Hydrocarbon scan, VOC's
If you suspect or observe:	Road salt	Total dissolved solids, pH, VOC's, heavy metals
If you suspect or observe:	Landfills	Total dissolved solids, pH, VOC's, heavy metals

If you suspect or observe:	Sludge utilization	Coliform bacteria, nitrate, metals (lead, cadmium)
If you suspect or observe:	Septic system failure	Coliform bacteria, nitrate, detergents, total dissolved solids, chloride, sodium, sulfates
If you suspect or observe:	Intensive agricultural use	Coliform bacteria, nitrate, pesticide scan, pH, total dissolved solids

Table adapted from DeLynn, H. and Skipton, S. 1998. [Testing for Drinking Water Quality](#), G89-907-A.