Protect Your Family: A Guide to Water Quality Testing for Private Wells

If you have a private well, then water quality testing should be important to you and your family.

Some contaminants in drinking water have been linked to cancer and toxicity, posing a risk to human health. Many contaminants often have no taste, odor, or color. Their presence can only be determined by laboratory testing.

While there is no state requirement to have your well water tested (although there may be from your mortgage lender or local Board of Health), the Massachusetts Department of Environmental Protection (MassDEP) recommends that all homeowners with private wells do so, and use a state certified laboratory.

Contamination of Wells

Well water originates as rain and snow that then filters into the ground. As it soaks through the soil, the water can dissolve materials that are present on or in the ground, becoming contaminated.

Some contaminants are naturally occurring from features found in the rocks and soils of Massachusetts. These include substances like bacteria, radon, arsenic, uranium, and other minerals.

Other contaminants find their way onto the land from human activities. On a large scale, industrial/commercial activities, improper waste disposal, road salting, and fuel spills can introduce hazardous substances to the ground. However, even typical residential activities, such as the application of fertilizers and pesticides, fueling of lawn equipment, and disposal of household chemicals can contaminate the ground when done improperly. Even an on-site residential septic system can pose a threat to your well. That is why taking measures to protect your well from contamination is so important.

Contaminants and testing frequencies

Standard Analysis:	**Testing Frequency**
Arsenic *Chloride* *Copper*	Monitor initially for all contaminants, and then at a minimum of once every ten years (except for bacteria and nitrate/nitrite which should be sampled yearly), or as otherwise required by the local Board

Fluoride of Health.
Hardness
Iron
Lead
Manganese
pH
Sodium
Coliform Bacteria
Nitrate/Nitrite
Radon
Gross Alpha Screen
(bedrock wells only)
VOCs
Recommended Tests

The following tests provide only the most basic indicators of a well's water quality. These tests identify some of the common natural and man-made contaminants found in our state's well water. However, you should also consider nearby land uses to decide whether additional tests are appropriate for your well. It is not necessary to do all of the tests at one time.

Standard Analysis

This basic analysis covers the most common contaminants. Some of these contaminants pose health-related concerns, while others only affect aesthetics (taste and odor).

Radon

Radon can be a well water problem in Massachusetts, especially in bedrock wells. Presently, there are no federal or state standards for radon in drinking water, only suggested action levels. [Note: If Radon levels are elevated in your well water, you should also consider checking your indoor radon levels.]

Gross Alpha Screen

Radioactive minerals, such as radium and uranium, may be dissolved in well water. A Gross Alpha Screen is a simple test to judge whether further testing for specific radioactive minerals such as radium or uranium might be needed.

Volatile Organic Compounds (VOCs)

The most common VOCs come from gasoline compounds (such as MtBE and benzene) and industrial solvents (such as TCE). MtBE can be found in well water even in remote areas.

Additional Tests

Circumstances relative to your well may require additional testing not described here. For instance, MassDEP does not recommend frequent testing for things like pesticides, herbicides, or synthetic organic compounds, mainly because of the high cost. However, such testing might be warranted if your water has elevated nitrite/nitrate concentrations or significant amounts of pesticide have been applied near the well. These less-routine tests may not be performed at all state certified laboratories.

When To Test

MassDEP recommends that prospective homebuyers test the water in a home with a private well before purchase. Water quality in wells is generally stable, and if a change is going to occur, it occurs slowly. Thus the interval between water quality tests, once you've purchased the home, can generally be in terms of years (see chart) if a well is properly constructed and located in a safe area. However, the following conditions would prompt more frequent testing:

- Heavily developed areas with land uses that handle hazardous chemicals.
- Recent well construction activities or repairs. MassDEP recommends taking a bacterial test after any well repair or pump or plumbing modification, but only after disinfection and substantial flushing of the water system.
- Contaminant concentrations above state or federal standards found in earlier testing.
- Noticeable variations in quality like a water quality change after a heavy rain, extended drought, or an unexplained change in a previously trouble-free well (i.e. funny taste, cloudy appearance, etc.).

When taking any sample, MassDEP recommends that it be taken after a heavy rainstorm. These events tend to highlight conditions of improper well construction or poor soil filtration.

What the Tests Tell You

Results will reveal the level at which any of the tested substances were found in your water sample. The mere presence of these contaminants in well water does not necessarily imply that there is a problem. However,

when levels exceed state or federal health standards, you should take steps to correct the situation. Several methods are available from commercial contractors to treat contaminated water.