PRIVATE DRINKING WATER IN CONNECTICUT

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Testing your well water provides you with information on the quality of your drinking water. Testing is the best way to ensure that your drinking water supply is safe from harmful chemicals. In addition, water testing can determine whether nuisance impurities, such as iron and manganese are present and at what levels. The purpose of this fact sheet is to assist private well owners in deciding how frequently to test their private well water and what to test for. It also provides homeowners with information about how to get their water tested, understanding their water test results and protecting their well from contamination.

Private Water Supplies

Homeowners with private wells are responsible for the quality of their own drinking water. They are generally not required to test their drinking water. However, testing is a good idea even if you do not suspect a problem because testing is the only way to be sure your water is safe to drink. An especially good time to test water quality is when buying a home so that you can make any contamination findings part of your home purchase decision. A good time of year to test is after a heavy period of rain, generally in the spring or fall. Even if your current water supply proves to be clean and safe to drink, regular testing is important because it establishes a record of water quality that may help identify and solve future problems.

In accordance with Section 19-13-B101 of the Public Health Code, testing is required for new wells. However, the required tests do not cover all contaminants. Water tests done during home purchases are usually required by the bank providing the mortgage. Contrary to common belief, such tests are not required by law. Water tests done for a home purchase do not necessarily cover all contaminants.

This publication provides general guidelines for private well water testing. However, these are just guidelines. Check with your Local Health Department to find out whether there are water quality problems specific to your area. It is also a good idea to ask your neighbors whether they have ever had water quality problems. The Connecticut Department of Public Health (DPH) Private Well Program is also a resource for questions about private well testing. DPH's Environmental and Occupational Health Assessment Program is a resource for questions about safe limits of chemicals in water and health concerns. Contact information is provided at the end of this fact sheet.

What To Test For? How Frequently to Test?

Even if you do not suspect any well water problems, it is important to test your water to ensure that it is safe to drink. Table 1 lists the tests we recommend for all private wells even if you do not notice any problems with your water. Table 3 lists water quality issues you might encounter and what tests you should perform if you have a particular issue with your water. Whenever you notice a change in the taste, color, odor, or clarity of your water, contact your Local Health Department or the Connecticut Department of Public Health (CT DPH), Private Well Program for assistance.

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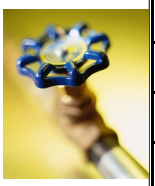
Table 1. Recommended Test for All Private Wells

Type of Test	When?	Why?
Basic Indicators *(See table 2 below)*	**Every Year** Also test after repair or replacement of your well, pump or water pipes.	Provides a general indication of water quality. Required for all new wells. Some basic indicators above their acceptable limit are associated with health concerns.
Lead *(2 samples; a first draw sample and a flushed sample should be collected when testing for lead in drinking water)*	**At Least Once** Also when planning a pregnancy or have a child under 6 years old in the home. *If your water is considered corrosive, test every 3-5 years.*	Lead can leach from your home's plumbing (pipes, faucets, valves, etc.) system. Corrosive water leaches lead more readily. Lead above the acceptable limit is associated with health concerns. Young children are especially susceptible to harmful effects from lead exposure.
Arsenic, Uranium, Radon	**At Least Once** Ideally, repeat test every 5 years	Arsenic, uranium and radon are naturally occurring in groundwater in some areas of CT and are associated with health concerns above their acceptable limit. Private wells with high levels have been found sporadically around CT, and levels may fluctuate.
Volatile Organic Compounds (VOCs)	**At Least Once**	Gasoline, oil, solvents or industrial chemicals spilled or leaked on the ground could get into your well water. VOCs above their acceptable limit are associated with health concerns.
Fluoride	**Every 5 years when a child under 12 is present**	Fluoride can occur naturally in wells throughout CT. A child's permanent teeth can become discolored from excess fluoride. Too little fluoride can increase risk of tooth decay. Your child's dentist will likely ask you about the fluoride level in your well water.

*Some drinking water standards are based on aesthetics and some are based on health risk. If your water exceeds a drinking water standard, contact your Local Health Department or CT DPH for assistance. For more information refer to the types of drinking water standards hyperlinked below.

DRINKING WATER STANDARD TYPES:

CT DPH Action Levels
US EPA Maximum Contaminant Levels (MCLs)
US EPA Secondary MCLs



For More Information Contact:

Health related: CT DPH, Environmental & Occupational Health Assessment Program, (860) 509-7740

All other questions (i.e., testing, treatment, etc.): CT DPH, Private Well Program, (860) 509-7296

Table 2. Basic Indicators Test

Parameter	Applicable Drinking Water Standard*
Total Coliform Bacteria	None Present
Nitrate-Nitrogen	10 milligrams/liter (mg/L)
Nitrite-Nitrogen	1 mg/L
pH	6.4 - 8.5 standard units (SU)
Odor	Less than 2
Chloride	250 mg/L
Hardness	150 mg/L
Apparent Color	Less than 15 SU
Sulfate	250 mg/L
Turbidity	Less than 5 SU
Iron	0.3 mg/L
Manganese	0.05 mg/L (Aesthetic based) 0.5 mg/L (Health based)

Table 3. Private Well Water Quality Issues and Testing Recommendations		
Water Quality Issue	**Possible Cause(s)**	**Recommended Water Test(s)**
Low pH (pH less than 6.5)	Generally naturally occurring	Hardness, Alkalinity, Sulfate, Lead, Copper, Cadmium, Zinc
Buildup of limescale (off-white chalky solids) on hot water plumbing, fixtures, kettles. Reduced soap lathering.	Hardness is caused by the amount of dissolved minerals, generally calcium and magnesium in your water.	Hardness
Blue or greenish stains on plumbing, fixtures or laundry. Plumbing leaks.	Corrosive water (influenced by pH, hardness, alkalinity, chloride levels, dissimilar metals in plumbing, etc.)	pH, Hardness, Alkalinity, Sulfate, Chloride, Sodium, Lead, Copper, Cadmium, Zinc
Rust-colored water, rust stains on clothing and plumbing fixtures, rust coating in toilet tank, foul odor	Iron or Manganese, Iron Bacteria	Iron, Manganese
Yellow, brown or blackish stains on plumbing fixtures, yellow or brown staining to laundry	Manganese, iron/manganese bacteria, sulfur bacteria	Manganese, Iron, Iron/Manganese Bacteria
Rotten egg odor, musty or swampy odor, tarnished copper and silverware	Hydrogen sulfide gas, high sulfates, sulfur bacteria, iron/manganese bacteria	Odor, Hydrogen Sulfide, Sulfate, Iron Bacteria, Iron, Manganese, Sulfur Bacteria, Coliform Bacteria
Cloudy, Turbid, Muddy Water	Silt, Sediment, microorganisms	Turbidity, Coliform Bacteria, Check Well Construction with an expert
Chemical, fuel or fruity odor	Leaking underground fuel tank, gas station fuel spill, industrial chemical spill, road runoff	Volatile Organic Compounds (VOCs)
Nitrates exceed 10 mg/L Nitrites exceed 1 mg/L	Fertilizer runoff, malfunctioning septic system	Pesticides* (contact your local health department about pesticide use in your area), Coliform Bacteria
Radon in air exceeds 4 pCi/L, or, Uranium in water exceeds 30 ug/L	Naturally-occurring uranium in bedrock	Uranium, Radium, Radon
Recurrent gastrointestinal illness	Human or animal waste contaminating well, cracked well casing, flooded well, malfunctioning septic system	Coliform Bacteria, Nitrates, Nitrites
Bitter, metallic taste	Corrosive (low pH) water	pH, Lead, Copper
Salty, brackish taste	Road salt runoff, nearby salt storage, well near salt water, improper setting on water softener	Chloride, Sodium, Total Dissolved Solids
Well within 1/4 mile of current or former orchard or farmland	Agricultural and/or arsenic-based pesticides get into well	Nitrates, Arsenic, Pesticides* (*ask for EPA Method 505*)
Well within 1/4 mile of commercial or industrial area	Gasoline, oil, solvents leaked or spilled on the ground get into well	Volatile Organic Compounds (VOCs)
Well flooding, ponding around well	Heavy rains, poor drainage around well	Coliform Bacteria, Basic Indicators
House foundation treated for termites before 1990	Termite pesticides leach into well	Pesticides* dieldrin and chlordane
Noticeable change in taste, color, odor, or clarity of your water.	Unknown	Contact your local health department or CT DPH Private Well Program
* Contact your Local Health Department or CT Dept. of Energy and Environmental Protection for advice about whether you should test for additional pesticides.		

What If I Already Have A Treatment System In My Home?

If you have water treatment equipment in your home, you should monitor whether the treatment system is doing its job by testing for the specific contaminant(s) that the system is treating. Be aware that water treatment systems are designed for specific contaminants and will not necessarily remove all contaminants! Periodically test your water quality before and after treatment to be sure the system is continuing to work properly. Refer to Publication #19: Questions to Ask When Purchasing Water Treatment Equipment for Your Home for more information about treatment.

How Do I Get My Water Tested?

You can have your water tested at any State-certified water testing lab. A current list of certified labs can be obtained from your local health department or from the DPH Certified Environmental Labs website. Make sure the private lab is certified to test drinking water for the contaminants you are requesting.

In most cases, you can collect a sample of your tap water yourself, although some labs may send a technician to collect a sample at your request. If you collect your own sample, carefully follow the laboratory's instructions to obtain a good sample. How to take a sample varies depending on the tests being performed. For example, some contaminants such as lead and copper may require that water remains stagnant in the pipes for a minimum of 6 hours and is collected upon the first draw of water. Other contaminants require that the water be flushed or run for a minimum period of time before collecting the sample. Some contaminants require special sample bottles and procedures. Cleanliness is a must; make sure that nothing but the water comes in contact with the opening of the bottle or the inside of the cap. Timeliness is important, too. Some contaminants deteriorate or change form with time. Most water samples need to be kept cool when being taken to the lab. To assure accurate results, after collecting your water samples make certain the lab receives them within the specified time directed on the instructions.

Keep Records

Keep a record of all your water tests for reference. Include the date and the test results. A change in the concentration of a contaminant may indicate that a water quality problem is developing. By comparing test results over time, you may find that a change in treatment is necessary or that a treatment device is not functioning properly.

Understanding Your Water Test Results

There are federal and state criteria for many of the substances that you might find in your well water. These criteria represent the concentration above which your water might not be safe to drink or might have a noticeable taste or odor.

DPH sets state drinking water criteria specifically for private wells, called Action Levels. Action levels are developed to protect you from health risks. Federal drinking water criteria to protect your health are set by the US Environmental Protection Agency (EPA) and are called Maximum Contaminant Levels (MCLs). You should compare the results of your private well tests to these criteria to determine whether the water is safe. If any chemical detected in your water is higher than an Action Level or an MCL, you should:

- Retest the water to confirm the exceedance,
- Stop drinking the water until the issue is resolved,
- Contact your Local Health Department or the CT DPH, Private Well Program for specific advice about using your water.
- Consider treatment to remove the contaminant(s) from your water. Refer to DPH's Publication about Publication #19: Questions to Ask When Purchasing Water Treatment Equipment for Your Home for more information about treatment.

Refer to DPH's factsheet Chemical Contaminants in Private Wells factsheet for more information about drinking water criteria.

EPA also sets drinking water criteria to protect you from aesthetic concerns such as taste, color and odor. These criteria are called Secondary Maximum Contaminant Levels (SMCLs). Secondary contaminants themselves do not necessarily present a health risk but could be an indication that your water has problems that may pose a health risk. For example, if the pH of your water is too low it may cause your water to be corrosive. Corrosive water can leach metals like lead and copper more readily from pipes and fixtures. High levels of lead in your water does pose a health risk, particularly for young children.

Results of a Basic Indicators Test should be compared with the appropriate limits shown in Table 2 in this fact sheet. However, be aware that some of the parameters in the Basic Indicators Test are based on aesthetics (taste/color/odor) and some are based on health risk. If your water tests results exceed any of the limits on the Basic Indicators Test, contact your Local Health Department for advice regarding whether you should stop drinking the water.

Protect Your Well!

You can protect your private well by paying careful attention to what you do in and around your home as well as your neighbor's activities near your well. Regular testing and good practices to prevent contamination can help ensure that your well supplies you and your family with good quality drinking water. Here are some important ways you can protect your drinking water well.

- ⇒ Locate a new well far from potential contamination sources.
- ⇒ Hire a professional to construct a new well and periodically inspect an existing well.
- ⇒ Use backflow prevention devices on outside faucets.
- ⇒ Properly seal abandoned and unused wells.
- ⇒ Never flush gasoline, motor oils, automotive chemicals, painting chemicals or solvents down the sink or toilet into a septic system.
- ⇒ Inspect and maintain your septic system.
- ⇒ Keep livestock and pet waste away from well.
- ⇒ Do not allow road, driveway or roof runoff to collect around well.
- ⇒ Do not mix or use pesticides, herbicides, fertilizers, fuels or other hazardous materials near your well.
- ⇒ Do not allow waste oils or gasoline to get into soil. Make sure home heating tanks are above ground or in basement. Never do automotive maintenance or repair on exposed soils in your yard.
- ⇒ Test your well water according to recommendations in this fact sheet.
- ⇒ As needed, consult sources of additional information listed at the end of this fact sheet.

For more information on well protection refer to Private Wells: Best Management Practice Checklist and Publication #26: Private Drinking Water Wells-Types of Construction.

For More Information

For more information, please contact:

CT Department of Public Health

- Private Well Program: (860) 509-7296
- Environmental and Occupational Health Assessment Program: (860) 509-7740

CT Department of Energy and Environmental Protection

- Remediation Division: (860) 424-3705

Your Local Health Department

For more information, click on the following links:

***Safe Drinking Water Limits*:**

- Action Levels
- MCLs
- Secondary MCLs

CT Department of Energy and Environmental Protection

- Potable Water Program
- Remediation Division

More information is available on the CT DPH, private well page regarding the following topics:

- Bacteria
- Copper
- Fluoride
- Hydrogen Sulfide and Sulfate
- Iron and Manganese
- Iron and Manganese Bacteria
- Manganese
- Lead
- Nitrates and Nitrites
- pH
- Arsenic
- Uranium
- Radium
- Radon
- Sodium and Chloride
- Hardwater
- Corrosion of Copper

Other Resources:

- Publication #19: Questions to Ask When Purchasing Water Treatment Equipment for Your Home
- Publication #26: Private Wells - Types & Construction
- CT DPH Certified Environmental Labs
- CT DPH Private Well Program Publications
- CT DPH Groundwater and Well Contamination Publications
- ATSDR Hazardous Substances Fact Sheets (ToxFAQs)
- Hazardous Waste Site Lists
- US EPA Office of Groundwater and Drinking Water
- US EPA New England