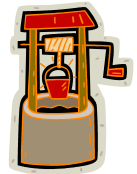


January 2013

WHAT YOU NEED TO KNOW ABOUT **CHEMICAL CONTAMINANTS IN PRIVATE WELLS**

It is important to test your drinking water for chemical contaminants if you live in a home with a private well. The purpose of this fact sheet is to assist homeowners in understanding what the test results mean in relation to federal and state drinking water criteria.



What is the Purpose of Private Well Testing?

Even if you do not suspect contamination in your water, testing is important to ensure your water is safe.

Contaminant Testing

Public drinking water supplies are required to test for a large number of toxic chemicals on a regular basis. However, these chemicals are never tested for in a private well unless the homeowner arranges for the test. There are cases where the well is tested as part of a larger investigation conducted by the local health department or the Connecticut Department of Energy and Environmental Protection (CT DEEP). However, in most cases it is up to you to test your own well. Even if there is no suspicion of contamination in your neighborhood, it is important to do a thorough test of your drinking water supply to ensure that the water is safe and healthy to drink. A good time to test is when buying a home so that you can make any contamination findings part of your purchase decision. At a minimum you would test for the basic indicators required in New Well Testing (see below). The following are some benefits from more extensive chemical testing:

- Find out whether there are particular contaminants (pollutants) of concern
- Find out whether you need to install a water filter
- Obtain baseline conditions against which to compare future testing

The specific chemicals to test for vary depending on your location relative to potential sources of pollution such as gas stations, dry cleaners, industries, landfills and farms. Detailed guidance on what to test for can be found at: [Publication No. 24: Residential Well Water Testing](#).

New Well Testing

When a new well is drilled it must be certified as safe to drink by the local health department. Their authority in this regard is Connecticut Public Health Code Section 19-13-B101. The required test for a new well includes basic indicators such as bacteria, nitrate, hardness, turbidity, manganese and iron. After the well is certified it should be retested once a year for these parameters. You would test the well for these indicators when purchasing a home as part of the home inspection process. This is also a good time to test for the larger list of chemical contaminants that may be present in groundwater due to local businesses and industries. These other chemical contaminants are not usually part of the testing done to certify a new well or when purchasing a new home.





How are Sample Results Reported?

The laboratory reports results in micrograms of a substance per liter of water (ug/L) or milligrams per liter of water (mg/L). The units of ug/L correspond to parts per billion (ppb) and mg/L corresponds to parts per million (ppm). One ppb equals one drop of water mixed in a competition-size swimming pool. While this dilution is huge, it still means that in every glass of water some contaminant is present. Therefore, one needs to have a way to determine the health significance of these levels.



If Contamination Is Found How Do We Determine If There Is A Health Risk?

There are federal and state criteria for many chemicals that have been found in groundwater. These criteria represent the concentration above which health risks become significant. Results of private well sampling are compared to these criteria to determine if the water is safe to drink.



What are the Criteria and How are They Set?

MCLs:

The United States Environmental Protection Agency (US EPA) establishes a standard called the maximum contaminant level (MCL). MCLs are protective of public health assuming people drink the same source for the entire life span (70 years). The criteria also take into account different life stages (e.g., young children). Public water systems must meet the MCLs. US EPA also sets a secondary MCL for some contaminants. The secondary MCLs are meant to prevent an aesthetic issue with the water (odor/taste) rather than a health effect. For more information on how MCLs are set, go to the US EPA link at the end of this fact sheet.

Action Levels:

Private wells are not regulated the same way as public water supplies. There are no requirements to test for most chemicals. When CT DEEP tests private wells during environmental investigations they look to the Connecticut Department of Public Health (CT DPH) for drinking water criteria. The DPH criteria are called Action Levels and they are set the same way as federal MCLs. In most cases the Action Level is the same value as the MCL. However, the federal MCL may be outdated or set based upon ease of detection and removal from a public water supply. CT DPH reviews these issues to make sure the Action Levels are updated and feasible based upon the ability to detect and treat the water in a residential well in Connecticut. This has led to a small number of contaminants whose Action Level is stricter than federal MCL. In these cases it is prudent that your private well meet the Action Level.



What Do the Test Results Mean?

Once you get the water results from the lab, the first step is to look down the list and see what was actually detected in your water. If the value next to the chemical name is ND or starts with "<" it means that the chemical was not detected or was less than the lowest concentration that the method can detect. In other words, good news – the chemical was not detected in your water.

Well Water is Not Free

When you drink from a public water supply you pay a water bill. In contrast, private well owners never get billed for the water they consume, so there can be an illusion that the water is free. However, there are maintenance costs for the pump and for repairing damage to the well itself. Additionally, private well owners should understand that the cost of chemical testing and filtering (when needed) is critical to ensuring their health and safety. Testing, treatment and repair services are the reason homeowners and others that are on a public water supply receive a monthly water bill.

Very low levels of some chemicals are normal for groundwater in Connecticut because they are part of the natural bedrock (e.g., metals such as arsenic, manganese or uranium) or because they were released at many locations around the state and have spread even further (e.g., MTBE). Therefore, don't be alarmed just because something is detected.



How Do I Know if My Water is a Health Risk?

The key is whether any chemicals are present at higher levels than the federal MCL or the state Action Level. The MCL value is usually listed in the test report next to the result from your well for easy comparison. The Action Levels can be found in the CT DPH fact sheet: [Action Level List for Private Wells](#). If any chemicals detected in your water are higher than the MCL or Action Level, your water does not pass the test and you may need to filter the water to remove that particular chemical.



What Should I Do if my Water Exceeds an MCL or Action Level?

1. Stop drinking the water. The MCLs and Action Levels are set to make sure you will not develop health issues from the water. If your water exceeds that level you lose that guarantee. Consumption of this water may not be an immediate health risk to you and your family because the criteria are set to protect the most vulnerable individuals from effects that can occur from long-term exposure. However, it is still prudent to stop drinking the water until the problem is resolved.
2. Contact your local health department and the CT DEEP. These authorities track groundwater pollution and may investigate the source of your contamination. Cleanup of the groundwater may reduce the level of contaminants in your well. CT DEEP has a Potable Water Program in which CT DEEP may provide you with a filter depending upon the contaminants and specifics of the situation. This program is subject to funding availability. Should the agency not be able to provide you with a filter, both CT DPH and CT DEEP will work in concert to ensure that you have the best information possible on what actions you may take to secure the correct filter and follow the appropriate maintenance schedule in order to ensure clean potable water. However, if the contaminant is from natural sources (e.g. uranium from bedrock), CT DEEP will not provide a filter or bottled water.
3. Consider installing a filter to remove the contaminant from your water. There are a variety of filters and they are designed for specific types of contaminants. You will have to choose between a point of use (e.g., kitchen tap) vs. whole house filter. You may also consider purchasing bottled water rather than a filtration system. These choices all depend upon the contaminant present. CT DEEP and CT DPH can help you choose the right filter for any contaminant you may have in your water. Also, the [National Sanitation Foundation](#) has a useful listing of water filters and what they are certified to remove.

Action Level Update: The DPH Action Level List has been updated as of January 2013. Some levels have been lowered since the last update in 2004 as the science has shown more clearly the potency of particular chemicals. Two examples are trichloroethylene (TCE) and 1,2-dichloropropane (DCP). These Action Levels have been lowered from 5 to 1 ug/L. Please compare your test results to the new [Action Level list](#). If your result is above the new Action Level and below the old Action Level (e.g., a TCE result of 3 ug/L), filtration at the kitchen tap (or switching to bottled water) is usually sufficient. There is little risk from bathing and showering at these low levels so you would not need a whole house filter.

If you had tested your well water in the past you should review those results against the updated Action Level list. If a result is higher than the new Action Level you should retest to see what the level is currently. If the retest shows an exceedance of the new Action Level but not the old Action Level, filtration at the kitchen tap is likely sufficient to prevent a health risk. Feel free to contact CT DPH if you have questions.



If Multiple Contaminants Are Identified in The Same Well, How is the Health Risk Evaluated?

MCLs and Action Levels are set based upon lifetime exposure to a single chemical in water. There are margins of safety built into these levels. Therefore, health concerns are unlikely even when several contaminants are present in a residential well at their Action Level or MCL, that would pose a health concern. However, CT DPH can review such data on a site-specific basis to ensure that this is the case.



Is Bathing and Showering a Health Risk?

If the contaminant is in the tap water, it will also be in your shower or bath water. In some cases this presents an extra exposure route. It depends upon the particular chemical. For example, metals that occur naturally in groundwater such as arsenic and uranium are usually not a bathing and showering concern while volatile organic chemicals (VOCs) can sometimes be of concern. This depends upon the size of exceedance above an MCL or Action Level. If the risk is high you would need a whole house filter rather than a kitchen tap filter. Consult with CT DPH regarding the safety of bathing and showering in water which has elevated levels of contaminants.



How Can I Protect My Water Supply?

The groundwater on and near your property is a precious resource that needs protection to ensure a clean supply of drinking water. Protection involves common sense measures that are simple yet vital to follow. Wells should be drilled a safe distance from the septic system and chemical waste should never be disposed of via the septic system. Do not spill gasoline, pesticides, paint, paint thinner, varnish or other chemicals on the ground as these may end up reaching groundwater and contaminating your well or your neighbor's well. Leaks from your oil tank can also contaminate the groundwater so remove any buried tanks and replace old above ground tanks before they leak. Additional tips for keeping your well contaminant-free can be found at the DPH [Publication No.26: Private Drinking Water Wells Types of Construction](#).



For More Information



- Connecticut Department of Public Health, Environmental and Occupational Health Assessment Program: 860-509-7740 [Private Well Program Fact Sheets](#)
- Connecticut Department of Energy and Environmental Protection: 860-424-3705
- [US EPA Drinking Water](#)
- [Your local health department](#)



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