

wellcare® information for you about **Home Drinking Water Treatment Devices**

Your well water may or may not need treatment. Ground water from deep, drilled wells is naturally filtered and cool, natural and pure. Many well owners are satisfied with the quality of their water just as it comes from the well.

If you need water treatment, contact your well contractor for recommendations for treating the problem or a referral to a water treatment professional in your area.

How to know if you need drinking water treatment

Most complaints about drinking water – whether from public water systems or from wells – are aesthetic, particularly about taste, odor and hardness. These are not necessarily harmful and can often be remedied by a home treatment device.

Home drinking water treatment devices can also help with health or safety problems, if any are identified when you have your water tested.

You should always have your water tested before installing a drinking water treatment device. The test's results will help you determine whether any home treatment device is necessary or what type is the most suitable.

How to select a lab for water testing

If you need help with testing your water, contact the water well contractor who installed your well. Or contact your local or state health department for a list of certified or licensed water testing laboratories. Or look in your telephone book under "Laboratories" or "Water Wells."

The lab will provide sample containers along with instructions for drawing your own water sample from your tap. *Make sure you follow the lab's instructions exactly. Proper sample collection is very important! Otherwise, the results may not be accurate.*

After you get your first test results, you would be wise to follow up with a second test taken at a different time before you decide on any water treatment. This is because there is a certain margin of error in water testing and contamination problems may vary.

What health-related contaminants should you be aware of?

Your well should be tested at least annually for *bacterial contamination*. This type of contamination can be the result of a poorly sited or constructed septic system too close to the well or agricultural run-off. Improper well construction or servicing may also result in bacterial contamination of your water.

A **total coliform bacteria** test is easy and inexpensive and can be used to determine if any bacterial contamination exists. Most coliform bacteria do not cause illness; however, the test can indicate the possible presence of other bacteria or viruses in your drinking water that may make you sick.

The acceptable level calls for no coliform bacteria to be present. *E. coli* (*Escherichia coli*) is one of the members of the coliform group of bacteria. The presence of *E. coli* in your water is an indicator of possible contamination. With a finding of *E. coli*, you should boil your water for 3 minutes before use until the problem is solved.

However, the presence of fecal coliform requires that you stop using your water immediately.

Chlorination is often the most effective treatment for disinfecting water contaminated by coliform bacteria. And disinfection may not require a treatment device, just periodic chlorination of your system. Ask your well contractor for information on chlorinating your well.

Another possible treatment for microbiological contamination is an ultraviolet disinfection device.

Nitrate is a drinking water contaminant that may be found in agricultural areas or near on-site sewage systems. Young children and nursing mothers are particularly sensitive to high concentrations of nitrates. For public water systems, the U.S. Environmental Protection Agency has set the maximum contaminant level for nitrate at 10mg/L expressed as nitrogen (N) or 45.0 mg/L expressed as nitrate (NO₃).

The test for nitrate is inexpensive, between \$15 and \$20. Reverse osmosis, ion exchange and distillation treatment devices are effective for the removal of nitrates.

To determine what – if any – other health-related contaminants you should test for, contact your well contractor or health department. They will be able to tell you about contaminants that may be found in your area.

What contaminants may cause taste, odor, color and other aesthetic drinking water problems?

Iron in your water can stain your laundry and fixtures and give your water a bitter, metallic taste. Iron can be in soluble or oxidized form. You need to know which form is in your water because each requires a different type of treatment. Your well contractor or water treatment professional can help you with this.

Soluble iron is easily recognized because the water is clear when it comes out of the faucet, but has red rust in it when it is left standing. It causes rust-colored stains on laundry, plumbing fixtures, porcelain and cooking utensils. Soluble iron (up to 3.0 mg/L) can be removed by an ion exchange treatment device. Manganese greensand oxidizing filters are effective for concentrations up to 10.0 mg/L. For higher concentrations, chlorination followed by filtration is often recommended.

Oxidized iron is called red water iron and is formed when soluble iron reacts with air.

Colloidal iron may be found in water from shallow wells but is seldom found in deep wells. Small particles of oxidized iron that do not settle out are called colloidal iron. You use filter paper to test for colloidal iron, but the particles cannot be removed by ordinary filtration. Sometimes, increasing the alkalinity of the water will allow the colloidal particles to form into settleable particles that can be removed with a mechanical filter. Colloidal iron can be removed by chlorination.

Hydrogen sulfide is a gas produced by decaying underground organic deposits, which give it a rotten egg smell and unpleasant taste. Hydrogen sulfide is easily dissolved in water. It is very corrosive and will rapidly tarnish silver, causing it to turn black. Sometimes, the hydrogen sulfide is in the hot water but not in the cold. This may be due to a chemical reaction that takes place in the water heater between the magnesium anode of the water heater and the sulfate in the water. Removing the anode will usually take care of the problem. Treatments for hydrogen sulfide include manganese greensand filtration or chlorination followed by filtration and aeration.

Hardness is common in ground water. It is caused by minerals being picked up by the water as it moves through rocks and soil. Areas with limestone rock are particularly susceptible. Hardness can cause mineral deposits in water heaters and pipes, film on sinks and bathtubs, and the need to use more soap in dishwashers and washing machines. Hardness can also reduce the efficiency of water heaters and cause them to wear out sooner.

Here's a guide for hardness ratings.

HARD WATER LEVELS

Grains Per gallon	Parts per Million (mg/L as CaCO₃)	Rating
less than 1.0	less than 17.1	soft
1.0 – 3.5	17.1 – 60	slightly hard
3.5 – 7.0	60 – 120	moderately hard
7.0 – 10.5	120 – 180	hard
over 10.5	over 180	very hard

Hardness is usually treated using ion exchange water softeners. When to treat for hardness is often your choice based on your preferences.

Deciding on a treatment device

You can find home water treatment businesses in your telephone directory. Your well contractor may also be able to help you. The more you know about the quality of your water and what treatment may be needed, the more likely you will be to avoid unnecessary, costly or inappropriate equipment.

One nonprofit organization that tests and certifies treatment devices is NSF International. NSF develops and maintains standards for devices and equipment related to public health – including water treatment devices. NSF certifies water treatment devices for the removal of specific contaminants. If a device is NSF certified, it will have the *NSF International* mark printed on it.

If you are looking for water treatment for microbial cysts or lead, you can look for devices certified under ANSI/NSF Standard 53. Other standards for which NSF tests and certifies home drinking water devices are:

Standard	Title
ANSI/NSF 42	Drinking Water Treatment Units – Aesthetic Devices
ANSI/NSF 44	Cation Exchange Water Softeners
ANSI/NSF 53	Drinking Water Treatment Units – Health Effects
ANSI/NSF 55	Ultraviolet Microbiological Water Treatment Systems
ANSI/NSF 58	Reverse Osmosis Drinking Water Treatment Systems
ANSI/NSF 62	Drinking Water Distillation Systems

Certification means that a product has met performance standards for removing a test contamination level of a particular contaminant.

You can get a list of home treatment devices meeting NSF Standards by contacting NSF International at 800-NSF-MARK or 734-769-8010. Or visit their website at www.nsf.org.

Maintaining your water treatment devices

You can't install a home water treatment device and forget about it! Most of the time, maintenance will not be expensive or time consuming, but it is necessary! Usually, you will need to replace filter cartridges, membranes or ultraviolet lights at least once a year. Find out about any maintenance requirements and associated costs before you purchase a device. Then maintain it according to the manufacturer's instructions. An improperly maintained device can cause more harm than good! Keeping accurate maintenance records is very important.

For more information about wells and other wellcare® publications

wellcare® is a program of the **Water Systems Council (WSC)**. WSC is a national nonprofit organization dedicated to promoting the wider use of wells as modern and affordable safe drinking water systems and to protecting ground water resources nationwide. Well owners and others with questions about wells or well water can now call the new **wellcare® hotline at 888-395-1033** or visit www.watersystemscouncil.org



Other organization you may want to contact:

Water Quality Association 630-505-0160 www.wqa.org



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