

wellcare® information for you about

Disinfecting Your Well

Chlorination disinfects your well by destroying unhealthy bacteria and microorganisms and removing dissolved iron, manganese, and hydrogen sulfide. It can be managed easily at home with common household bleach and food grade white vinegar.

Chlorination uses concentrations of chlorine that are 100 to 400 times the amount found in municipal water supplies. The highly chlorinated water is held in the pipes of your well system before it is flushed out and the system is ready again for use.

It is very important to read all cautions and instructions before proceeding with the chlorination procedure.

When to Disinfect Your Well

You should test your water for bacteria each year, usually in the spring, or if there is any change in the taste, color or odor of your drinking water.

Other well maintenance activities can also threaten your water supply. Disinfect your well when:

- The well is new. Chlorinate before using.
- The well has been repaired, reconstructed, or new pump or pipes have been added to the water system.
- The well has been flooded or exposed to bacterial contamination in another manner, such as a crack in well cap.

How to Disinfect Your Well

Liquid chlorine in the form of household bleach and food grade white vinegar can be used to disinfect your well. When chlorine is added to water the pH level will rise. Food grade white vinegar is used to lower the water's pH level so the chlorine will work effectively. Make sure to use a new bottle of unscented bleach, as it can lose potency over time. Don't use stabilized swimming pool chlorine products or non-chlorinated "pool shock" products, as they are not effective enough to clean drinking water.

Before You Begin

Be careful when handling chlorine solutions. Wear rubber gloves, goggles, and a protective apron. If chlorine accidentally gets on your skin, flush immediately with clean water.

Caution: Bleach added to water with a pH below 5.0 will release chlorine gas which is toxic. This procedure should be done in a well-ventilated area. Do not mix vinegar and chlorine together above ground.

Determine the amount of water in your well known as Standing Well Volume (SWV). This is accomplished by knowing the total depth of the well and subtracting the depth to water multiplied by the gallons per foot the well can hold. Refer to your well log, use the following table and equation to find the SWV. If you need assistance contact your water well professional for assistance.

$$\text{SWV} = \text{depth of well} - \text{depth to water} \times \text{gallons per foot in well}$$

| Well Casing Diameter (inches) | Water Volume Per Foot of Water Depth |
|-------------------------------|--------------------------------------|
| 4 | 0.65 |
| 6 | 1.4 |
| 8 | 2.6 |
| 10 | 4.1 |
| 12 | 6 |

Once you know your SWV, follow the steps below:

Step 1 Consider the general water quality of your well. High levels of iron, sulfur, or hard water will influence the effectiveness of the disinfection process. Using Table 1 or 2 below, calculate how much liquid chlorine bleach and vinegar you will need.

Table 1: Disinfection Quantities for Average Well Water Quality

no sulfur, low to moderate bacteria and hardness

| Standing Well Volume (gallons) | pH Control (white vinegar) Food Grade | Chlorine Required, min. 5.25% (Sodium Hypochlorite)* |
|--------------------------------|---------------------------------------|--|
| 50 | 1 ½ cups | 1 cup |
| 100 | 3 cups | 2 cups |
| 150 | 1 quart | 2 ½ cups |
| 200 | 5 ½ cups | 3 ½ cups |
| 250 | 6 ½ cups | 1 quart |
| 300 | 8 cups | 5 cups |
| 350 | ½ gal + 1 cup | 6 cups |
| 400 | ½ gal + 2 ½ cups | 7 cups |

Source: Moravec Water Wells – www.moravecwaterwells.com, prior to note

*Amount of sodium hypochlorite should be at least 5.25%; however, most household bleach now contains 8.25% sodium hypochlorite.

Table 2: Disinfection Quantities for Difficult Well Water Quality

high bacteria, iron, hardness, and sulfur

| Standing Well Volume (gallons) | pH Control (white vinegar) Food Grade | Chlorine Required, min. 5.25% (Sodium Hypochlorite)* |
|--------------------------------|---------------------------------------|--|
| 50 | 5 ½ cups | 3 ½ cups |
| 100 | ½ gal + 2 1/2 cups | 6 ½ cups |
| 150 | 1 gallon | ½ gal + 2 cups |
| 200 | 1 gal + 5 cups | ½ gal + 5 ½ cups |
| 250 | 1 ½ gal + 2 cups | 1 gal + 1 cup |
| 300 | 2 gallons | 1 gal + 1 quart |
| 350 | 2 gal + 5 cups | 1 ½ gallons |
| 400 | 2 ½ gal + 2 ½ cups | 1 ½ gal + 3 cups |

Source: Moravec Water Wells – www.moravecwaterwells.com, prior to note

*Amount of sodium hypochlorite should be at least 5.25%; however, most household bleach now contains 8.25% sodium hypochlorite.

- Step 2 Turn the power to the pump OFF. Place any water treatment equipment in to the bypass mode. Failure to do so could result in a breakdown of the treatment media.
- Step 3 Remove the cap on the top of the well. Pour the required amount of vinegar followed by the required amount of chlorine into the well in one rapid, continuous flow, avoiding all electrical connections.
- Step 4 Turn the power back ON.
- Step 5 Attach a clean hose to a nearby faucet and place the other end into the top of the well. Open the faucet and recirculate the chlorinated water for one hour, washing down the entire inside of the well casing and pump piping to remove any excess chlorine residue. Turn off the hose and recap the well.
- Step 6 Open each indoor faucet one by one and let the water run until a strong odor of chlorine is detected. Shut off faucet.
- Step 7 Allow the chlorine solution to remain in the well and plumbing system for 8 hours, or overnight.
- Step 8 Flush the entire system until you can no longer smell chlorine. First, run the chlorinated water outdoors, but be careful to avoid areas that drain into lakes or streams because it can kill fish and other aquatic life. The solution can, likewise, kill grass and shrubs, as well as disrupt septic systems. A good choice may be a backyard ditch (make sure the ditch is not connected to a lake or stream) or side area that will partially contain the solution while it is absorbed by the soil.
- Step 9 After the chlorine is out of the system, turn off the outside faucets and turn on the remaining indoor faucets to flush them. Rusty water may come from the faucets, so flush until the water is clear. This should only take a few minutes.
- Step 10 After the entire system has been flushed out, shut down all faucets. Change any water treatment filters and clean water treatment devices separately per the manufacturer's or your water treatment professional's instructions. Once cleaned, put water treatment into service. Chlorination of the water well system is now complete.
- Retest your water supply for bacteria at least 2 days after disinfection. If chlorination has not eliminated the bacteria problem, you may need a continuous disinfection system or there may be a problem with the well construction or its location. Contact a water well professional for guidance.

FOR MORE INFORMATION to help you maintain your well and protect your water supply



wellcare® is a program of the **Water Systems Council (WSC)**. **WSC** is the only national organization solely focused on protecting the health and water supply of the 43 million people nationwide who depend on household wells for their water supply.

This publication is one in a series of **wellcare®** information sheets. There are more than 90 information sheets available **FREE** at www.watersystemscouncil.org.

Well owners and others with questions about wells or groundwater can also contact the **FREE** wellcare® Hotline at 1-888-395-1033 or visit www.wellcarehotline.org.

JOIN THE WELLCARE® WELL OWNERS NETWORK!

By joining the **FREE** **wellcare®** Well Owners Network, you will receive regular information on how to maintain your well and protect your well water.

Contact us at 1-888-395-1033 or visit www.watersystemscouncil.org or www.wellcarehotline.org.

