Well Chlorination Guide

Eau Claire City-County Health Department

Well disinfection is necessary when a well is contaminated by coliform bacteria and/or *E. coli*.
You can disinfect your well by following this guide or hire a licensed well professional.
Licensed well professionals can be found at: https://dnr.wisconsin.gov/topic/Wells/contacts.html

SCAN ME

Safety First

FIGURE 1
(CIRCUIT BREAKER)

- ✓ Turn off electrical power to the pump at the circuit breaker (Figure 1) before removing the well cap. Always use a voltmeter to verify that power has been cut to the well before proceeding. **Use extreme caution when working with electricity.** Together, water and electricity can be deadly. If you are not confident in your ability to work safely with electricity, contact a licensed well professional to disinfect your well.
- ✓ Always follow manufacturer's use and safety directions. Wear rubber gloves and rubber-soled footwear. Avoid eye and skin contact with bleach. Wear protective goggles or a face shield.
- ✓ Examine wires and connections after the well cap or seal is removed. If damaged wiring is noticed, **stop immediately** and call a professional for repairs.
- ✓ Keep the power off when adding the chlorinated solution into the well.

DO NOT:

- Do not mix chlorine and ammonia products. Mixing these two products create a concentrated chlorine gas.
- Do not mix or use a chlorine product in an enclosed space (ex. pumphouse).
- Do not bathe/shower in or drink heavily chlorinated water.
- Do not leave or store bleach products where children can get them.

Supplies List:

1. A garden hose long enough to reach from your water faucet to the well. This hose also needs to reach an area away from your well, septic system, landscaping, and water bodies.
2. Clean 5-gallon bucket
3. Funnel
4. Plastic tarp
5. Protective goggles/face shield and rubber gloves
6. Five gallons of water from a safe source, like from a public (city) water system or purchased water from a store.
7. Chlorine test strips that read at least from 0-200 ppm
8. Unscented household chlorine bleach with no additives. The label will say the active ingredient is 6 or 8.25% sodium hypochlorite. DO NOT use swimmng pool or hot tub disinfectants.

Step 1:

Turn the power off of the well pump. Turn or push the bypass valves to the “bypass” or “out of service” position (Figure 2) for all water treatment devices (ex: water softeners, reverse osmosis systems, etc.) and appliances that cannot be exposed to bleach. These appliances may need to be disinfected separately. Follow manufacturer’s instructions for disinfection procedures.

Remove all filters from devices and appliances. Bait tanks and livestock watering troughs may require special attention.

FIGURE 2
(BYPASS VALVES)

Step 2:

Standard Well Cap: Remove the well cap and move the wires to the outside of the casing to avoid getting the wire connector wet. (Figure 3)

-Or-

Sanitary Seal:
Remove the vent (see Figure 4-top arrow). Do not remove the compression bolts from the compression fit well seal. (see Figure 4-bottom arrow)

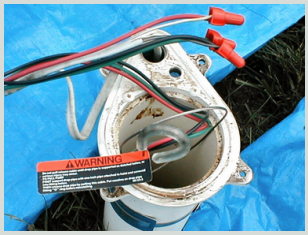

FIGURE 3
(WIRES IN WELL CASING)

FIGURE 4
(VENT AND COMPRESSION BOLTS)

Step 3:

Inspect these components:

- Wire insulation for cracking, peeling, or missing wire connectors
- Well casing for cracks or other damage
- Well cap for missing bolts, damaged vent screens, or loose gaskets

Any plumbing or well defects need to be fixed so that surface water, insects, rodents, or other harmful substances cannot get into your well.

Step 4:

Add clean water in a clean 5-gallon bucket until it is about 3/4 full.

Add the amount of unscented bleach as indicated in the table:

You want between 50-200 parts per million (ppm) of chlorine in the recirculating water (Step 8) for disinfecting your water system.

Amount of water in well (feet)	2-inch diameter well casing	4-inch diameter well casing	6-inch diameter well casing
10	2 cups	2 cups	2 cups
50	2 cups	2 cups	3 cups
100	2 cups	3 cups	4 cups
300	3 cups	4 cups	10 cups

The amount of water in a well is the total depth of the well minus the static water level. If unable to determine the amount of water in the well, use the total depth of the well instead. If you do not know the depth of your well, try searching for the well construction report here: https://dnr.wisconsin.gov/topic/Groundwater/Data.html#wellreports or scan the QR code →

Note: this table’s bleach solution is good for disinfecting a well and the water system in an average home, including water pipes, water tanks, and water heater. Reduce the amount of bleach by 1 cup if only the well needs to be disinfected. An increase amount of bleach may be needed if:

- The water system contains multiple buildings
- Has large amounts of distribution piping or water storage
- You are disinfecting because your well was flooded, has nuisance bacteria, or is a larger diameter well.

Step 5:

Use a funnel when pouring the bleach solution into the well.

Avoid getting any bleach solution on metal well cap components and wires. Exposing wires to bleach causes corrosion.

FIGURE 5
(POURING BLEACH SOLUTION IN WELL)

Step 6:

Recirculate chlorinated water:

1. Turn the circuit breaker to the pump ON. **CAUTION: The wires in the well casing are now energized.**
2. Connect a garden hose to the most convenient faucet.
3. Run water from the hose in an area away from the well, septic system, landscaping, and bodies of water until you smell bleach or detect chlorine with test strips. This may take 5-10 minutes, and the water may be discolored. Continue monitoring and running the water until it runs clear. If flow significantly decreases, shut off power to the pump and contact a licensed well professional.
4. Turn the water OFF.
5. Place the garden hose into the well.
6. Turn the water ON.
7. Recirculate water. Continue to recirculate for about 30 minutes after you first smell bleach from the garden hose. Use two chlorine test strips as visual indicators to determine if water from the hose is at least 50 ppm chlorine (high dose) or less than 1 ppm (trace amount). If below 50 ppm, go to STEP 4 and add more bleach solution and repeat STEPS 5 and 6.
8. Turn the circuit breaker to the pump OFF.
9. Rinse well components with fresh, unchlorinated water. Rinsing washes off bleach solution to prevent corrosion.
10. Replace wires and well cap.
11. Turn the circuit breaker to the pump ON.

Step 7:

Select your first faucet or fixture. Remove faucet aerator, if present. This will prevent them from getting clogged from loosened scale.

Run hot water until a chlorine test strip indicates a minimum of 50 ppm. This will take time as the chlorinated water in the system must replace the entire volume of your water heater. If below 50 ppm, go to STEP 4 and add more bleach solution and repeat STEPS 5, 6, and 7.

Repeat the process with cold water. Turn OFF the faucet and repeat for all remaining faucets and fixtures, including showers, tubs, toilets, water-using appliances, exterior faucets, yard hydrants, and outbuildings.

Step 8:

Turn the circuit breaker to the pump OFF.

Let the bleach solution sit in the water system for a minimum of 8 hours, preferably 24 hours.

Step 9:

Turn the circuit breaker to the pump on.

Remove bleach from the water system by turning on a garden hose from an outside faucet and allow the chlorinated water to run onto an area where it will not damage lawns, shrubs, gardens, water bodies, or septic systems. Pump until you can no longer smell bleach in the water from the hose. This may take 30 minutes to 24 hours or more for flush all the bleach solution from the well. Use chlorine test strips to verify that water coming from the outside faucet or yard hydrant is free of any bleach solution.

Flush the chlorinated water from water heaters.

RUN THE WATER FROM ALL INTERIOR AND EXTERIOR WATER FAUCETS AND FIXTURES TO FLUSH THE BLEACH SOLUTION FROM THE REST OF THE WATER SYSTEM.
USE CHLORINE TEST STRIPS THAT TEST AT 0 PPM OF CHLORINE TO VERIFY THAT NO BLEACH SOLUTION IS PRESENT.

Step 10:

Return bypass valves to the ON position after following manufacturer's directions for disinfecting appliances and water treatment devices.

Step 11:

After the bleach solution is removed from the water system, sampling is recommended to make sure the well water tests negative for total coliform before you use it for drinking or cooking. Total coliform bacteria may regrow in the water system. It is important to retest your water between two to four weeks after disinfection. If total coliform is still present, repeat the disinfection procedure.

It is not unusual to disinfect a water system multiple times to eliminate total coliform if it has been growing in the system for a long period of time. If disinfection attempts are unsuccessful, the well may need to be cleaned as well as disinfected. Some severe bacteria issues involving a biofilm may need more aggressive approaches to include a more concentrated chlorine solution, controlling the pH of the solution, or the additional of salt. In these instances, contact a licensed well professional for further assistance.

Pick up a water sample bottle from the Eau Claire City-County Health Department at 720 2nd Avenue, Eau Claire, WI 54703 or call 715-839-2870 to discuss resampling your water after disinfection.

For more information on your well and water system, see the Wisconsin DNR "Well Owner's Manual" (https://www.watersystemscouncil.org/wp-content/uploads/2016/02/Well-Owners-Manual.pdf) .