

SHOCK CHLORINATION

Shock chlorination involves adding a high amount of chlorine (bleach, which should be 5.0 - 5.25% sodium hypochlorite - **avoid** using scented products such as those with lemon scent and make sure that the product is fresh as it loses its strength over time) to the water in a well. Water is then pumped through the plumbing system and is left to sit in the pipes to allow for adequate disinfection. See the next section titled 'How to Shock Chlorinate Your Well' for detailed steps.

As per OMAFRA (2003), recommendations for shock chlorination of your well water are as follows:

- Immediately after any construction, maintenance, repair, inspection, or upgrading.
- If your water sample results show 0 *E. coli*, but greater than 5 total coliforms. If this is the case, make sure to sample again 3-4 days after shock chlorinating (once all the chlorine is out of the system so that you don't get a false negative test result).
- If your water sample results show greater than 0 *E. coli*.
 - DO NOT drink the water.
 - First, take a new water sample and then shock chlorinate.
 - If the new water sample results show greater than 0 *E. coli* or any total coliforms then you should inspect your well or hire a licensed well contractor (remember to shock chlorinate after the inspection).

When you are inspecting your well keep in mind the possible causes of potential contamination.

Not all wells are the same size, so not all wells will need the same amount of chlorine (bleach) for shock chlorination. In order to determine how much chlorine will be required, you will need to use the following steps:

- First, you will have to determine the diameter and the depth of your well. You may be able to find this information in your well record, but if not, you will need to measure your well yourself.
 - The materials you will need include a measuring tape and long length of non-stretchy string attached to a relatively heavy weight.
 - To get the diameter of your well, you will have to measure across the widest part of your well casing.
 - A few more steps are involved in finding the depth of your well. You will have to securely attach a relatively heavy weight to the end of a string.
 - Make sure that you do not use a string that is stretchy or is plastic (e.g. fishing line).
 - You will then lower the weight into the well until you can feel that it has reached the bottom of your well. Then, remove the string and weight from the well.
 - Measure the length of the string that appears to be wet. This will indicate how deep the water is in your well.

Now that you have found the diameter and depth of your well, you can use the following table to determine how much bleach you will need for the shock chlorination of your well. Follow the steps provided in the next section titled 'How to Shock Chlorinate Your Well'.

Table 5: Amount of bleach required for the shock chlorination of your well depending on the depth of your well.

Volume of unscented bleach added for every 3 meters (10 ft.) of water in the well		
DIAMETER OF CASING		BLEACH VOLUME (5.0-5.25%)
millimeters (mm)	inches (")	milliliters (mL)
50	2	6
100	4	30
150	6	60
200	8	100
250	10	200
300	12	250
400	16	400
500	20	650
600	24	900
900	36	2000 (2 liters)
1200	48	3600 (3.6 liters)

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HOW TO SHOCK CHLORINATE YOUR WELL (AS ADAPTED FROM OMAFRA (2003))

After you have added the required amount of bleach to your well, follow the last few steps below as per the recommendations by OMAFRA, 2003:

1. Continue using another safe source of water for drinking/cooking/brushing teeth, etc. until the appropriate number of test results show that the water is safe.
2. Add the calculated amount of bleach to the well.
3. Make sure to remove carbon filters located on the well system (these filters remove chlorine). Put in a new filter after shock chlorination so that the old one does not re-contaminate the system.
4. Run the water at every faucet that is supplied by the well until a strong chlorine odour is detected. If your nose is not a good indicator, you can get a pool test kit to verify that you have chlorine in the water.
5. If you should be able to smell chlorine and cannot, or it is very weak, add more bleach to the well.
6. Drain your water heater and fill it with this newly chlorinated water.
7. Backwash any water softeners or filters (with the exception of carbon filters) on your treatment system.
8. Let the chlorinated water sit in your plumbing system for 12 hours. Ideally you would do this overnight.
9. Remove the chlorinated water from the well by running water from a hose outside onto the ground surface until you no longer smell or detect chlorine. Make sure that you do not run all of the water through faucets in your house into your septic system. Do not run the hose water over the ground of your septic system, you do not want to kill the bacteria needed for proper operation of your septic system. It is best to drain it from a hose outside of your

house into a nearby ditch. Do not run the hose to the storm sewers as they often run into waterways. NOTE: Be aware of any local by-laws regarding discharging chlorinated water into the environment or storm sewers.

10. A bacteriological water sample should be taken 3-4 days after you shock chlorinate. If the test shows that your water is safe, wait 1 week and test it again. Two safe test results in a row show that your treatment has worked. If bacteria are still present, shock chlorinate the well again and re-sample your well water. Check your well, the equipment and surrounding area, and fix the issue that is causing the contamination if you can. The aquifer and not just the well may be contaminated. You may need to contact a licensed well contractor. You may need to install a continuous treatment system, or construct a new well (ensure to plug the old one).

Let's take a look at Bob's well:

Bob's well is 300 mm in diameter. Using the string method he found out that his well is 6 m deep.



Bored wells with proper casings and sturdy well caps will help to prevent accidental falls into the well and reduce the amount of contamination that can enter the well. As with any type of well, they must be constructed and maintained properly to reduce the risk of contamination and injury.

- Since Bob's well is 300 mm in diameter, he will need to add 250 mL of bleach for every 3 m of water in his well.
- Since his well is 6 m deep in total, he will need to divide the 6 m by 3. This equals 2.
- He must then multiply the 250 mL of bleach by 2, which will equal 500 mL of bleach.
- So, Bob will need to add 500 mL of bleach for the adequate shock chlorination of his well.

Let's take a look at Judy's well:

Judy's well is 500 mm in diameter. Her well is 40 m deep.

- Since Judy's well is 500 mm wide in diameter, she will need to add 650 mL of bleach for every 3 m of water in her well.
- She takes the 40 m depth and divides by 3. This equals 13.33.
- She then multiplies the 650 mL of bleach by 13.33, which equals 8664.50 mL of bleach.
- Rounding up, Judy will need to add 8665 mL (or 8.665 L) of bleach for the adequate shock chlorination of her well.



A dug well with an upgraded sturdy lid (that is properly vented and vermin proof) reduces the amount of contamination that can enter the well. Older wells of this type may have been constructed with stones, bricks, or other materials. The coloured portion of this well lid allows for observation of the well without having to removing the heavy concrete lid. The concrete lid can be removed if maintenance is required.