**Environmental Systems Service, Ltd.**
**218 North Main Street * P.O. Box 520**
**Culpeper, VA 22701 * 540-825-6660**

# WELL DISINFECTION PROCEDURE

*Note: Wear appropriate clothing, rubber boots, gloves, and eye protection when performing the well disinfection procedure.*

1. **A water well should be disinfected**: (1) when the well is newly drilled; (2) when repairs to the well or pumping equipment are completed; (3) when test results indicate the well is contaminated; (4) following periods of flooding or excessive rainfall, especially for shallow wells; (5) if there is an infant in the home; or (6) when there has been a sudden change in water turbidity, odor, or taste.

2. Use regular, UNSCENTED, household chlorine bleach that you purchase at the grocery store unless it has been recommended to you that you use the stronger sodium or calcium hypochlorite ("pool shock"). Do not use splash-less bleach.

3. Follow the charts on the back of this page to determine the correct amount of chlorine to disinfect your well. Most new wells are 6 inches in diameter. You may dilute the chlorine with 2-3 gallons fresh water in a larger bucket, but make sure you use the total recommended amount of chlorine.

4. Turn off the well pump circuit breaker then remove the well cap and pour the recommended amount of bleach or hypochlorite down the inside wall of the well. **Avoid pouring the chlorine solution directly onto the well pump wiring.**

5. Turn the well pump circuit breaker back on then using a clean garden hose, rinse the inside of the well where the chlorine was added. Continue running the water into the well to ensure that the chlorine is thoroughly mixed with the well water and a strong odor of chlorine is detected in the water running back into the well. The time necessary to accomplish this varies with the depth and flow of the well, but will range from at least 10 minutes to one hour, or more.

6. Turn the well pump circuit breaker off again and replace the well cap.

7. Turn the well pump circuit breaker back on then turn on all inside and outside cold and hot water faucets, including toilets and showers, and run the water until you detect a STRONG odor of chlorine at all of the faucets. It is recommended to turn off the water heater at the breaker box during this time. If a strong odor of chlorine is not detected, you may need to add more chlorine to the well.

8. Turn off all of the faucets and allow the chlorine to remain in contact with the well and the household plumbing overnight (at least 12-24 hours). DO NOT USE THE WATER DURING THIS TIME.

9. Following contact lasting overnight, turn on any outside faucets and begin flushing the chlorine from the system until you can no longer detect a chlorine odor at any of the taps. Next turn on each cold water tap and flush the system until a chlorine odor is no longer noticeable. (Running the faucets in this order prevents the septic system from being overloaded with chlorine.) This process may take up to 24 hours, and care should be taken not to run the well dry and damage the well pump. It may be best to flush the lines for a couple of hours at a time to allow for the well to replenish. When flushing of the cold water lines is complete, run the hot water to flush the water heater.

10. It is CRITICAL that all chlorine be flushed from the system prior to collecting a sample. ESS will provide chlorine test packets at no charge to ensure that the chlorine has been removed.

11. Follow the directions for sample collection that are found on the back of the yellow form.

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# RECOMMENDED AMOUNTS OF CHLORINE FOR WELL DISINFECTION

A. Quantity of Household Liquid Bleach (5.25% Chlorine)

| Well Depth (feet) | Well Diameter (inches) | | | | |
|---|---|---|---|---|---|
| -- | 6 | 8 | 10 | 24* | 32* |
| 20 | 1 Cup | 2 Cups | 1 Quart | 1 Gallon | 1.5 Gallons |
| 30 | 2 Cups | 1 Quart | 2 Quarts | 1 Gallon | 1.5 Gallons |
| 40 | 2 Cups | 1 Quart | 2 Quarts | 1.5 Gallons | 2 Gallons |
| 60 | 1 Quart | 2 Quarts | 3 Quarts | 2 Gallons | 2.5 Gallons |
| 80 | 1 Quart | 2 Quarts | 1 Gallon | 2.5 Gallons | 3 Gallons |
| 100 | 2 Quarts | 3 Quarts | 1.25 Gallons | N/A | N/A |
| 150 | 3 Quarts | 1 Gallon | 1.5 Gallons | N/A | N/A |
| 200 | 1 Gallon | 1.5 Gallons | 2 Gallons | N/A | N/A |
| 300 | 1.25 Gallons | 1.5 Gallons | 2 Gallons | N/A | N/A |
| 400 | 1.5 Gallons | 2 Gallons | 2.5 Gallons | N/A | N/A |

B. Quantity of Sodium Hypochlorite (12.5% - 15% Chlorine)

| Well Depth (feet) | Well Diameter (inches) | | | | |
|---|---|---|---|---|---|
| -- | 6 | 8 | 10 | 24* | 32* |
| 20 | ¼ Cup | ½ Cup | 1 Cup | 1 Quart | 1.5 Quarts |
| 30 | ½ Cup | 1 Cup | 2 Cups | 1 Quart | 1.5 Quarts |
| 40 | ½ Cup | 1 Cup | 2 Cups | 1.5 Quarts | 2 Quarts |
| 60 | 1 Cup | 2 Cups | 3 Cups | 2 Quarts | 2.5 Quarts |
| 80 | 1 Cup | 2 Cups | 1 Quart | 2.5 Quarts | 3 Quarts |
| 100 | 2 Cups | 3 Cups | 1.25 Quarts | N/A | N/A |
| 150 | 3 Cups | 1 Quart | 1.5 Quarts | N/A | N/A |
| 200 | 1 Quart | 1.5 Quarts | 2 Quarts | N/A | N/A |
| 300 | 1.25 Quarts | 1.5 Quarts | 2 Quarts | N/A | N/A |
| 400 | 1.5 Quarts | 2 Quarts | 2.5 Quarts | N/A | N/A |

C. Quantity of Calcium Hypochlorite (70% Chlorine)

| Well Depth (feet) | Well Diameter (inches) | | | | |
|---|---|---|---|---|---|
| -- | 6 | 8 | 10 | 24* | 32* |
| 20 | 3 Tbsp. | 4 Tbsp. | 6 Tbsp. | 12 oz. | 1 lb. |
| 30 | 4 Tbsp. | 6 Tbsp. | 3 oz. | 1 lb. | 1.5 lbs. |
| 40 | 6 Tbsp. | 8 Tbsp. | 4 oz. | 1.5 lbs. | 2 lbs. |
| 60 | 8 Tbsp. | 4 oz. | 6 oz. | 2 lbs. | 2.5 lbs. |
| 80 | 9 Tbsp. | 5 oz. | 8 oz. | 2.5 lbs. | 3 lbs. |
| 100 | 4 oz. | 6 oz. | 10 oz. | N/A | N/A |
| 150 | 6 oz. | 8 oz. | 12 oz. | N/A | N/A |
| 200 | 8 oz. | 10 oz. | 1 lb. | N/A | N/A |
| 300 | 12 oz. | 1 lb. | 1.5 lbs. | N/A | N/A |
| 400 | 1 lb. | 1.25 lbs. | 2 lbs. | N/A | N/A |

* bored well

*~All amounts are approximate and are a starting point; you may need additional amounts for complete disinfection*

Reference: modified from Bacteria and Other Microorganisms in Household Water, Virginia Cooperative Extension Publication 356-487, Virginia Tech University, reprinted 2002.