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Schnieder, Rollin D., "CC1 Revised 1979 Emergency Flood Information" (1979). *Historical Materials from University of Nebraska-Lincoln Extension*. 2979.

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Emergency Flood Information

RECONDITIONING WELLS
AND WATER SYSTEMS

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By Rollin D. Schnieder, Extension Safety Specialist,
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Disinfection of Water Supply Systems

When a well is suspected of having been contaminated from such sources as ground surface run-off or floods, it should not be used for drinking purposes until samples taken are analyzed and found bacteriologically safe. A bacteriological analysis can be performed at no cost to Nebraska residents by the Nebraska Health Department Laboratory. Sterile water sample bottles are available from the State Health Laboratory, the Division of Housing and Environmental Health and County Extension Agents in some areas.

The well should first be cleaned of any foreign debris. The method varies with the type of well (dug, drilled, etc.). The well should be pumped until the water appears clean. Then the complete water system should be disinfected.

A universal disinfecting agent used in water works is chlorine. It is available in many forms; however, the two most commonly used forms are dry chlorine (calcium hypochlorite) and liquid sodium hypochlorite, commonly referred to as "household bleach." Household bleach contains approximately 5.25 percent available chlorine.

You must use ingenuity in introducing the chlorine into the well, reservoir and piping system to assure proper distribution and disinfection of all parts of the water system.

One convenient way to chlorinate the water supply is to add the chlorine directly into the well. A high-strength hypochlorite solution is made by adding one cup of bleaching liquid to five gallons (19 l) of water and mixing thoroughly. This chlorinated water should be poured into the well, washing the walls, casing, drop pipe and other equipment in the process. Attach a hose to a nearby faucet and start the pump. This lets the recirculated chlorine water come into contact with the casing, drop pipe, etc., to assure complete disinfection of the well itself. If after a reasonable period (approximately 10 minutes), a chlorine odor is not evident, repeat the procedure with fresh chlorine water and continue to recirculate the water for approximately 30 minutes. This may not be done with some wells.

After the recirculating process, the components of the well should be reassembled. Leave the well undisturbed for approximately two hours.

The well pump should then be started and all taps opened and flushed until a chlorine odor is evident, thus allowing for complete disinfection of the distribution system.

The taps should then be closed and the remainder of the chlorinated water flushed to waste through an outdoor tap until all traces of chlorine are gone, thereby avoiding any possible damage or overloading of the septic system.

Shallow wells may remain contaminated for some time after flooding because of surface seepage; therefore, for at least two weeks after the ground has dried up, the water should be boiled or chlorinated before use.

To Disinfect Small Quantities of Water for Drinking

When you have reason to believe that your drinking water supply has become contaminated, small quantities of water can be made safe to drink by following one of these two methods:

A. Boiling Method

1. Strain the water through a clean cloth to remove any sediment or floating materials.
2. Boil the water vigorously for at least three minutes.

B. Chlorination Method

Purchase from a drug or grocery store a bottle of sodium hypochlorite solution. This is sold under trade names such as Clorox, Purex, White Magic, Hi-Lex, etc., and contains about five percent active chlorine.

1. Strain the water through a clean cloth to remove any sediment or floating materials.
2. Read label to determine the percentage of chlorine and follow this table.

Chlorine	Drops per Quart of Water
1%	10
4-6%	2
7-10%	1

3. Mix well
4. Let stand for 30 minutes. For muddy or turbid water, DOUBLE the amount of chlorine shown above.

REMEMBER:

1. The NUMBER ONE RULE OF WATER SAFETY is that no matter how clear and sparkling the water looks, it is not necessarily safe to drink.
2. If in doubt about how much chlorine solution to add to the water being disinfected, add it until a faint chlorine odor or taste can be detected from the water.

To Chlorinate Water in Cisterns and Other Holding Tanks

One fluid ounce (30 ml) of a five percent solution such as described above is ordinarily enough to disinfect 375 gallons (1425 l) of water. To use, mix a measured quantity of the hypochlorite solution in a bucket of water and pour this bucketful into the cistern to be disinfected. Allow the water to stand for an hour or longer.

Table 1

Amount of Water to be Treated	Amount of 5% Hypochlorite Solution to be Mixed in Bucket
Gallons	Teaspoonsful
10-20	1/4
20-40	1/2
40-80	1
80-100	1 1/2
100-150	3
150-200	4
200-300	5
300-375	6

Table 2

Diameter of Cistern in Feet	0.5	1	2	3	4	5	6	7	8
Gallons for Each Foot of Water Depth	1.5	6	24	53	94	147	212	288	375

The above treatment should impart a distinct chlorine taste to the water. This taste is harmless, but indicates that enough of the chemical has been used to disinfect the water. If no odor or taste of the chemical is present, repeat the treatment using one-half the original amount of chemical.

Such procedure will disinfect only the water actually present at the time of treatment. If the water supply is subject to seepage from the surface or from some source of pollution such as a privy vault or cesspool, the treatment will have to be repeated often enough to maintain a chlorine taste.

Any process of disinfection is at best a temporary measure, the steps should be taken to reconstruct the water supply system or secure the water from another source known to be good. The procedure outlined above is for underground water only. Usually water from a lake or stream will require more chlorine solution to disinfect it.

To Recondition Water Systems

Damage to an electrical water system from flood water can be kept to a minimum by the following methods:

1. Disconnect the electric motor and take it to an electrical repair shop. Here it can be checked for any shorts or grounds caused by moisture. If badly saturated with water and mud, it will be necessary to thoroughly clean the motor and dry out the windings in a drying oven. Thoroughly oil bearings before reuse. Motors on ejector or jet pumps have two types of mounting. On one type the motor is a separate unit mounted on the pump and can easily be serviced. Some pumps have the end bell of the motor as a part of the pump and the motor shaft may be one piece running into the pump. With this type of mounting and shafting, remove pump and motor as a unit and take it to an electrical shop. It is not necessary to remove drop pipes.

2. Electrical controls and pressure switches should be cleaned and dried. Electrical wiring should be checked for shorts.

3. The water pumps should be cleaned and valves checked for mud and dirt. The inspection plate on the side of the pump gearing should be removed and all dirt and water removed from gears and gear box. Replenish the gear box with fresh oil.

4. The storage tank should be all right unless muddy water was pumped into it before it was shut off. If dirty, clean and drain thoroughly.

5. After the system is put back into condition, operate it for some time to thoroughly pump out the well and force fresh water through all pipe lines. Check the motor for proper switch operation and overheating and check the pump gear box for proper oil circulation.

For more information contact your county extension agent.

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Leo E. Lucas, Director