

Well Owner Tips in Case of Flooding

Water Quality

Flood conditions pose serious threats to the quality of water supplies. Listen for public announcements on the safety of your community's water supply. Water from flooded private water wells need to be tested for bacteriological purity, and perhaps disinfected after flood waters recede. Water from such wells should be considered **NOT SAFE FOR DRINKING** until proven otherwise by a certified laboratory. Cloudiness or changes in taste or smell are signs of possible contamination. If there is any indication that the water supply has been breached by flood waters, even without noticeable changes in taste or smell, **obtain a water sample kit for testing from the Nebraska Department of Health and Human Services Laboratory by calling (402) 471-3935**. These kits may also be available from city or county health departments, or local county extension offices.

Water for Drinking and Cooking

If you suspect your water supply was contaminated, drink only boiled, commercially bottled, or treated water until your supply is tested and found safe. Bacterial contamination may reoccur after a flood, so conduct another water analysis a month or two after the first test.

Listed below are some general guidelines concerning water for drinking and cooking.

- Do not use contaminated water to wash dishes, brush your teeth, wash and prepare food, or make ice.
- Boiling water at a rolling boil for at least 1 minute will kill most harmful bacteria and organisms.
- Rinse containers for storing water with a bleach solution before using them. Always use caution with temporary containers since some may have residual chemicals which may further contaminate water put in them.
- Water may be treated with chlorine or iodine tablets, or by mixing six drops ($1/8$ teaspoon) of unscented, or ordinary household bleach per gallon of water. Mix the solution thoroughly, and let stand for at least 30 minutes. (This treatment will not kill parasitic organisms.) Very cloudy water may be strained through a clean cloth before disinfecting or boiling, but the disinfectant should be doubled. Store disinfected water in clean, covered containers. A distinct chlorine taste will be noticeable after treatment; this taste is harmless, but indicates that enough of the disinfectant has been used to treat the water.

Disinfecting Private Water Wells – “Shock Chlorination”

If a well has tested positive for coliform or other bacterial contamination, a simple and relatively inexpensive procedure known as “shock chlorination” can be performed. Shock chlorination involves placing a strong chlorine solution into the complete water source and distribution system to kill any harmful bacteria and disease-producing organisms.

Preparations to “Shock Chlorination” (Check for Proper Well Construction)

- Before doing a shock chlorination treatment, it is important to check the integrity or condition of the water supply source. The well must be constructed to prevent entrance of animals, insects, debris, or surface water. The well casing should be sanitarily sealed at the “wellhead” to prevent entrance of contaminants. Private water wells should meet Nebraska’s minimum standards of construction. Questions concerning water well construction should be directed to the Nebraska Department of Health and Human Services at (402) 471–0598.
- If residents or homeowners are not familiar with the mechanics of their water supply system, they should contact a qualified professional to do the job. It is important to warn everyone who may use the water supply system that it is being disinfected, and that it is not safe to drink at this time.

“Shock Chlorination” Procedures

Chlorine is a universal disinfecting agent that is highly toxic to bacteria at concentrations of 200 milligrams per liter and above. “Shock chlorinating” a well involves adding a chlorine solution to the water supply so it reaches a concentration of 200 milligrams per liter and then circulating it to disinfect all parts of the water system. Chlorine is available in several different forms. The two most often used for well disinfection are granular or “dry” chlorine, and liquid or “hypochlorite” solutions, commonly known as household bleaches. Granular chlorine contains about 65 percent available chlorine (calcium hypochlorite in solution) for bacterial-killing ingredients. Household bleaches contain approximately 5.25 percent sodium hypochlorite solution as active bacterial-killing ingredients. When used properly, both are equally effective for disinfecting private water wells. To mix an effective chlorine solution, add bleach or granular chlorine to five gallons of water in a clean, non-metallic container. See table below for the specific amounts to add.

Table. Bleach required for private water well disinfection (for each 10 feet of water depth in well)

Well Diameter	Amount of Chlorine granules	Amount of Laundry Bleach
2-8 inches	1 ounce	1 pint
10-14 inches	3 ounces	3 pints
16-20 inches	7 ounces	7 pints
22-26 inches	12 ounces	12 pints
28-30 inches	16 ounces	16 pints
36 inches	24 ounces	24 pints

Chlorinating the Water Supply

Introducing the Solution

Pour the chlorine solution directly into the well, generously splashing the well pump, casing, piping and other well equipment as much as possible. Attach a hose to a nearby faucet and direct it back into the well. Open the faucet and use the hose to thoroughly wash down the interior of the well. Leave the hose running for at least an hour or until the strong chlorine odor can be detected. Now open all taps (inside and outside faucets, hydrants, etc.) in the system. Leave the taps running until you smell chlorine, then shut them off. This will ensure that chlorinated water reaches all parts of the water distribution system. Once the well water has been chlorinated and thoroughly recirculated, it should be allowed to remain in the system for at least 24 hours. Reseal the well and wait for a full day before proceeding to “flush” the system. After the 24 hours, flush the system to rid the water supply of chlorine residual. To do this, open one outside tap (hose bib or hydrant) and with the aid of a garden hose, drain into an open field, ditch or other low lying area. Do not drain into the home’s on-site septic system, since chlorine will kill bacteria that are essential in breaking down wastes in the septic tank.

Chlorine will also harm grasses and shrubs, so avoid draining the chlorinated water onto these areas. Leave the tap running until you can't smell the chlorine anymore. Open up inside water taps, being careful not to run more than about 100 gallons of chlorinated water through drains and eventually into the septic tank. Wait about an hour and then run the water again to make sure no chlorine odor remains. Your water supply has to be completely free of chlorine residual before it is retested, because chlorine residue will interfere with bacteriological purity analysis.

Follow-up procedures

In serious instances of coliform bacterial contamination, more than one chlorination treatment may be necessary. Always retest your water supply after shock chlorination before using it for drinking or cooking purposes. Laboratory kits are available from the Nebraska Department of Health and Human Services Laboratory at 3701 South 14th, Lincoln, Nebraska 68502 or by phoning (402) 471-3935. Kits may also be available from local health departments, and some county extension offices.

Collect water samples from an indoor faucet with the aerators or filters removed, if possible. Samples should not be collected from water lines that go through a water softener or other treatment device. In most cases, the cold water tap at the kitchen sink is "unsoftened" or "hard" water. Water samples should be collected on a week day and delivered or mailed to the laboratory to be analyzed within 30 hours of collection. Recurrent coliform contamination may indicate a problem with your well construction or location (i.e., a well that terminates in a pit and is subject to low lying run-off). Contact the Nebraska Department of Health and Human Services at (402) 471-4982 or a licensed well driller for advice on your particular private water supply system. Shock chlorination should also be performed whenever repairs or modifications are made to the water supply system. Upon receiving results of bacteriologically safe water from the Nebraska Department of Health and Human Services Laboratory, the water supply may be returned to full use. It is recommended that the water be retested after a month or two since bacterial contamination can reoccur after a flood.