National Testing Laboratories, Ltd.
Quality Water Analysis

Natural Disasters and Your Drinking Water Supply

Disasters that results in flooding are the biggest threat to private wells. In this article will focus on what should be done for wells that are in areas that have been flooded. The first danger is electrical; you should not turn on the pump until it is thoroughly dried and checked by a qualified electrician or well/pump contractor. Turning on the pump prematurely can cause damage to the pump and or well, not to mention the risk of electrical shock.

The pump should be cleaned to remove any silt or sand to prevent burn out; contact a well or pump contractor to help with this. Finally there is the risk of contamination, specifically microbiological. Wells at the biggest risk for contamination include wells that are older than 10 years or less than 50 feet deep. Floodwater can also enter wells that are not properly capped. The water should not be used for drinking or washing until it has been tested and cleared of bacteria.

The well should be disinfected after flooding events to ensure safety. Chlorine, in the form of household bleach, is typically what is used as a disinfectant, but there are other options available. Here in this article will focus on using bleach because it is readily available for an emergency well disinfection. The first step is to determine how much chlorine should be added. In order to do this you must determine the volumes of water contained in the well. You will need the following information to determine volume: well depth, water level, well casing diameter and amount of water storage in the system. You take the well depth and subtract the water level, which will give you the amount of water in feet. Calculate the volume of water, using the figures in the table (Table 1) below, by multiplying the depth of water in the well by the water volume per foot based upon your well casing diameter.

Next, you will need to estimate the volume of water in the distribution systems. You will need to take into account all the water storage including the water heater, pressure tank and pipelines; a good estimate for pipes is 50 gallons. Add these numbers together giving you the total number of gallons of water. Now that you know how much water you are treating, you need calculate the amount of bleach required to get a level of 200 ppm (parts per million) of chlorine in the system. Using bleach containing 5.25% NaOCl (Sodium Hypochlorite), you will need 3 pints for every 100 gallons of water you will be treating. If you are treating well water containing iron, hydrogen sulfide or other organic substances, you may need to add more bleach to achieve the 200 ppm solution.

For complete information visit the Wilkes University Center of Environmental Quality at www.water-research.net/Waterlibrary/privatewell/shockchlorination.pdf

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Table 1

Volume of water contained per foot of well depth

Well Casing Diameter (inches)	Water Volume per foot of water depth (gallons) [1]
4	0.65
6	1.47
8	2.61
10	4.08

1 Volume of water calculated as volume of a cylinder multiplied by 7.48 gallons/cubic foot

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