Emergency Water Purification

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These temporary water disinfection methods are recommended for use during an emergency to disinfect small quantities of water for drinking, cooking, or brushing teeth.

Clarifying
Bacteria inside solid particles of soil, etc., are harder to kill than bacteria in the water itself. If the water source is cloudy or muddy, first clarify the water by letting it settle. Course materials, like sand, will settle in a few minutes. Finer particles, like silt and clay, will take much longer. After most of the suspended particles have settled to the bottom of the container, gently pour the clear water off the top into a second container being careful not to agitate the liquid more than necessary. Alternatives to pouring the clear liquid off the top would be to gently draw the clear water off with a basting bulb or siphon it into a clean container with a length of tubing. This water should then be filtered by pouring it through a clean cloth or other filter media such as coffee filters. Store the filtered water in clean containers and disinfect it by boiling or by chlorination.

Boiling
Boiling is a very effective means of disinfecting water. Bring water up to a rolling boil and boil for at least five minutes. Add an extra minute for each 10,000 feet of elevation. Boiled water tends to taste flat. Re-oxygenating the water by pouring it back and forth between two clean containers will improve taste.

Chlorination
One source of chlorine is ordinary household chlorine bleach. Be sure to use bleach that does not have fragrances, soaps, or other additives. Common bleach should contain 5.25 percent sodium hypochlorite. Most sources recommend adding 8 drops per gallon for clear water and 16 drops per gallon for cloudy water. Water should be stirred and then allowed to stand for 30 minutes to give the chlorine time to contact and kill the micro-organisms present. (8 drops = 1/8 teaspoon, 16 drops = 1/4 teaspoon)

Dissolved minerals in some water sources tend to tie up some of the chlorine, leaving less residual chlorine in solution to act as a disinfectant. For chlorine to be effective it should be present in sufficient concentration to be detectable by odor and taste after the 30 minute waiting period. If the water does not taste and smell of chlorine at that point, add another dose and let it stand another 15 minutes.

If the chlorine taste is too strong in the water after disinfection, pour it from one clean container to another several times. This will drive some of the chlorine off as a gas, lowering the level of chlorine in the water and improve its taste.

References:
- Safety and Disaster Preparedness Information and Links - Lancaster County, Nebraska Extension website. http://lancaster.unl.edu/ag/safety.htm