COUNTY OF GLENN
HEALTH & HUMAN SERVICES AGENCY

Christine Zoppi
Director

Erin Valdez	**Amy Lindsey**	**Bill Wathen**	**Grinnell Norton**	**Vacant**
Deputy Director Administration	Deputy Director Behavioral Health	Deputy Director Social Services	Deputy Director Public Health Director of Nursing	Deputy Director Community Action

Environmental Health Department
247 N. Villa Avenue
Willows CA 95988

Phone: 530-934-6102
Fax: 530-934-6103

Well Disinfection, Emergency Water Treatment and Water Storage Information

WELL DISINFECTION

The purpose of disinfection is to destroy harmful (pathogenic) organisms. The type and extent of disinfection used is determined by the source and condition of the water to be treated. Both CHLORINE RESIDUAL and CONTACT TIME are essential to effectively kill pathogenic microorganisms.

PROCEDURES

Wells recently constructed or repaired, or wells that have been flooded or otherwise contaminated must be thoroughly disinfected before being put to use. The following procedure should be performed to disinfect a well prior to using it for drinking water.

1. All openings into the well must be sealed before beginning well disinfection (except the plug hole in the well cap where disinfectant is added). Wells that are not sealed will rapidly become re-contaminated and will not reliably supply safe water.

2. Pump well water to the ground surface until water is relatively clear.

3. Stop pump.

4. Add household chlorine bleach (i.e., Clorox, Purex, directly into the well casing based on **Table 2-2** (below). Do not use scented bleach or any swimming pool products containing stabilized chlorine.

5. Allow well to stand for 30 minutes to permit chlorine to settle in well water, then surge well by alternately starting and stopping pump in order to wash down the inside of the casing and the drop line with chlorinated water. If possible, use some of the heavily chlorinated water pumping from the well to wash down the inside of the well casing (using a faucet near the well or pressure tank). This can be done by returning the water through the chlorination opening.

6. Open taps at farthest end of water system and at "dead ends" until chlorine odor is detected, then close taps.

7. Let the chlorinated water in the well, the storage tank, and any piping in the house stand for at least 24 hours.

8. Pump well water to the ground surface or a waste line until there is no chlorine odor in the water. The heavily chlorinated water may damage plants when it is pumped from the well. We recommend that chlorinated water be pumped onto a driveway or pasture. Avoid pumping into a waterway where aquatic life could be injured.

9. The water should then be tested to be sure that it is safe for drinking. All chlorine must be out of the system to get a reliable bacteriological test result. We recommend that you wait at least a week after you can no longer smell chlorine to test your well. To have Glenn County Environmental Health test your well you should fill out well sample request and pay the fee, currently $40.00.

Table 2-2
Disinfection of Well Casing or Water Pipe

CHLORINE COMPOUND REQUIRED TO DOSE 100 FEET OF PIPE AT 50 PARTS PER MILLION (PPM)			
	CHLORINE COMPOUND		
Diameter of Pipe **or Casing (in inches)**	65% Available Chlorine (Calcium Hypochlorite)	25% Available Chlorine (Cloride of Lime)	5% Available Chlorine (Household Bleach)
2	1/4 ounce	1/2 ounce	2 ounces
4	1 ounce	2 ounces	9 ounces
6	2 ounces	4 ounces	20 ounces
8	3 ounces	7 ounces	2 1/8 ounces
10	4 ounces	11 ounces	3 1/2 pints
12	6 ounces	1 pound	5 pints
16	10 ounces	1 3/4 pounds	1 gallon
20	1 pound	3 pounds	1 2/3 gallons
24	1 1/2 pounds	4 pounds	2 1/3 gallons

When the well to be treated is of unknown depth or volume, at least 1 pound of 65% available chlorine or one gallon of household bleach such as Clorox or Purex (5.25% chlorine) may be added in lieu of the use of the above table.

EMERGENCY WATER TREATMENT FOR INDIVIDUALS OR FAMILIES

The purpose of disinfection is to destroy harmful (pathogenic) organisms. The type and extent of disinfection used is determined by the source and condition of water to be treated. If there is a possibility of sewage contamination, then extensive treatment following American Water Works Association (A.W.W.A.) standards must be used. If there is no possibility of sewage contamination, then less drastic treatment methods may be used. Both **CHLORINE RESIDUAL** and **CONTACT TIME** are essential to effectively kill pathogenic microorganisms.

To disinfect small quantities of water (5gal. or less) the following procedures are recommended:

BOILING: Boiling is the safest method of purifying water. Bring water to a rolling boil for at least one minute. Increase boiling time to at least three minutes if you live at high elevations above 6,500 feet. To improve taste, allow the water to cool, and then pour the water from one clean container to another several times.

PURIFICATION TABLETS: Available at most drugstores or camping supply stores. Follow directions.

BLEACH PURIFICATION: Liquid household bleach (5.25% sodium hypochlorite) can be used to achieve a concentration of at least 1 part per million (ppm) residual chlorine, by adding the bleach in accordance with table below. Mix thoroughly and let stand for 30 minutes. Household bleach that contains perfumes or ingredients other than sodium hypochlorite should **not** be used as they may be toxic.

IODINE: Tincture of iodine can also be used for purification. Follow the same directions for mixing as with liquid bleach, using the amounts from the table below.

Table 2-1: Emergency Disinfection

	BLEACH		IODINE	
AMOUNT OF WATER	CLEAR WATER	CLOUDY WATER	CLEAR WATER	CLOUDY WATER
1 Quart	2 drops	4 drops	5 drops	10 drops
1 Gallon	8 drops	16 drops	20 drops	1/2 tsp.
5 Gallon	1/2 tsp.	1 tsp.	1 tsp.	2 tsp.

Excessive turbidity will greatly reduce the efficiency of the disinfecting chemical or process. Turbid water should be filtered through a paper towel or several layers of clean cloth prior to disinfection.

FILTERS: Use a "backpacking" type filter and follow the directions on the filter.

HOW TO STORE WATER

Water should be stored in glass or plastic (preferably glass) containers with tight fitting, screw- on caps. Mark date on containers when stored and place in a cool dark location. Use within one year and replace. A small amount of household bleach (5.25% sodium hypochlorite) 8 drops per gallon will prevent bacterial growth. Purchased bottled water can be stored as purchased for several months. You should plan on a minimum of 2 gallons per person per day for drinking, cooking, and personal hygiene.