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## **DRINKING WATER SAFETY**

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### **It's Your Health**

Historically, water has played a significant role in the transmission of human disease such as typhoid fever, cholera, infectious hepatitis and many other varieties of intestinal diseases. Through the introduction of water treatment with disinfection of municipal supplies and the implementation of bacteriological surveillance programs there has been a dramatic decrease in the occurrence of water related illnesses. When a municipal water supply is not available the responsibility of developing and maintaining a safe water supply rests with the owner of the property. Usually water is obtained from either surface water or ground water sources. Surface water supplies are obtained from lakes, reservoirs, streams, ponds and rivers. These supplies are always subject to intermittent pollution and should therefore be continuously treated to make them safe.

Ground water supplies include dug, bored, driven and drilled wells and if properly maintained are normally a source of safe water, providing there is no source of pollution nearby.

### **Dug Well**

A dug well is normally 0.9 m (3') in diameter and 4.5 m (15') to 11 m (36') in depth, depending upon where the ground water table is encountered. The ground water bearing soil is usually penetrated only for a short distance and therefore after considerable heavy water usage or during a drought the dug well might run dry. Dug wells are more likely to become polluted, especially older wells which are usually not constructed with a water-tight concrete casing as recommended. Old dug wells that are lined with stone or brick walls should be reconstructed so that their upper 2.5 m (8') are set with water tight joints. Water tight tops should be provided and the ground must be sloped away from the well to ensure that all surface drainage is diverted to prevent contaminants from seeping into the well.

# — *Health & Environment Facts* —

## **Drilled Well**

Drilled wells are less likely to become contaminated and are more dependable sources of water. Drilled wells serving single households are usually 10 cm (4") to 15 cm (6") in diameter and commonly between 15 m (50') and 60 m (200') in depth, depending on the availability of water. Contamination of drilled wells usually occurs by surface water entering through the top of the well casing. For this reason all drilled wells should be provided with a well seal which generally consists of a rubber disk sandwiched between two metal plates. The seal is designed to accommodate pump pipes and an air vent. When bolted in place the steel plates squeeze the rubber disk outwards against the casing to provide a water-tight seal.

## **How Can I Be Assured a Safe Water Supply?**

- Ensure your well is properly constructed and located to prevent the direct entry of surface water.
- Take 3-4 seasonal bacteriological water samples from your house and cottage.
- Take a sample if your well has been subjected to flooding.
- Always take a sample from a newly constructed or renovated well.

## **How Do I Disinfect My Well?**

Draw off a small supply of drinking water for overnight use before disinfecting the well. See "Emergency Water Treatment" procedures for this overnight supply.

- Disconnect the carbon filter on your system.
- Add to your well the proper amount of unscented household bleach (5%) to disinfect the volume of water in your well. Consult the following tables. Newly constructed wells require stronger treatment (5 times greater than the tables).
- Mix the household bleach with several litres of water before applying it to the well. The vent hole on a drilled well may provide a place to pour in the solution.

### **Chlorine Required For Dug Well .9 m (3ft) Diameter**

Water Depth		Household Bleach	
		5%	
Meters	Feet	Litres	Quarts
1.5	5	1.1	1
3.0	10	2.2	2
4.5	15	3.3	3
6.0	20	4.4	4
7.5	25	5.5	5
9.0	30	6.6	6
10.5	35	7.7	7
12.0	40	8.8	8

# — *Health & Environment Facts* —

## Chlorine Required for Drilled Well up to 15 cm (16") Diameter

Water Depth		Household Bleach 5%	
Meters	Feet	ml	Ounces
7.6	25	140	5
15.0	50	280	10
22.8	75	420	15
30.0	100	560	20
38.0	125	700	25
45.0	150	840	30
53.0	175	980	35
61.0	200	1,120	40

(Note: All conversions are approximate)

1. Scrub the walls of the well when possible.
2. Turn on all faucets to distribute chlorinated water in the system until you can smell chlorine.
3. Turn faucets off and allow the treatment to proceed over night.
4. Drain the entire water system until the chlorine odor is no longer present. Do not drain this water into your septic tank system.

## **Remember**

- Wait one day before collecting a sample for bacteriological testing.
- Boil or chlorinate all drinking water until you receive a satisfactory laboratory report.

## **Danger**

- Only a professional should enter a well.
- Read the label before using chemical disinfectants.

## **How Do I Perform Emergency Water Treatment?**

- Boil it - Boil the water for 5 minutes. After it is cooled, pour the water repeatedly from one container to another to eliminate the flat taste.
- Chlorinate it - Add 1.25 ml (1/4 teaspoon) of liquid household bleach (such as Javex) to 4 litres (1 gallon) of water. Mix well and allow to stand for 15 minutes.

# **— Health & Environment Facts —**

## **How Can The Public Health Inspector Help Me?**

- The inspector can advise the homeowners how to chlorinate contaminated supplies and may be of assistance on how to effectively correct well problems.
- The Public Health Inspector conducts special surveys to trace sources of possible contamination and may order corrective measures if a pollution source is implicated.
- The Public Health Inspector will call upon assistance from water quality experts or other agencies in emergency situations such as accidental chemical or oil spillage into water supplies.

## **References:**

Ontario Regulation 612/84

Ministry of Environment - Well Guidelines

Reprinted from Canadian Institute of Health Inspectors "Drinking Water Safety"

If you are concerned about the safety of your water or you wish more information please call your health unit.