SunCountry HEALTH REGION

Fact Sheet for Cistern Cleaning after a Precautionary Drinking Water Advisory (PDWA) or an Emergency Boil Water Order (EBWO)

March 29, 2012

To maintain the safety of the drinking water, owners of water cisterns should ensure that: drinking water is protected from contamination during filling, storage, and usage. It is important that the cisterns are cleaned and disinfected regularly; and the water used for cleaning is potable water.

Cleaning and disinfecting a cistern regularly will help to maintain the water quality. Regular maintenance can follow utilize the disinfecting process (see the saskh2o.ca publication entitled "Maintaining Safe Domestic Water Quality With Cisterns and Water Tanks"). Where a precautionary drinking water advisory (PDWA) or emergency boil water order (EBWO) has been issued, the cistern should be cleaned and disinfected as below.

Cleaning Procedure

The following cleaning procedure is recommended as part of regular maintenance:

1. Drain the drinking water cistern completely. Do NOT use a sewage hauler to pump out the drinking water cistern.
2. Wash all internal surfaces. Scrub them with brushes and non-corrosive food-grade detergents or use a pressure washer that uses a cleaning solution or high water pressure to remove all dirt from the interior of the drinking water cistern.
3. Examine all seals, surfaces and the floor for signs of infiltration, contamination, cracks and leaks.
4. Rinse the interior of the drinking water cistern with drinking water to remove the remaining dirt, debris and detergent residue.
5. Discard all rinse water from the interior of the drinking water cistern.
6. Disinfect or sanitize the interior of the drinking water cistern, following the disinfection or sanitization procedures below.

For safety reasons, do not enter any cistern or tank as there may be dangerous concentrations of hazardous gases or insufficient oxygen that could result in death. All cisterns or tanks should be considered a "confined space," which poses severe dangers to human or animal life. No one should enter a cistern to perform maintenance unless they are properly trained in confined space entry and properly equipped with the air testing,

ventilation and rescue equipment. Proper confined space entry procedures should be used at all times. No matter how clean the cistern or tank may appear, these dangers are not able to be detected by human sight or smell.

The homeowner should only undertake those activities that do not require entry into the cistern or tank. For example, after emptying, the walls may be washed down with a garden hose, wand or a pressure washer, while working from outside the tank. The wash water can be removed using a submersible pump and discharged into an open outside area. This may have to be done more than once to adequately remove settled material.

Disinfection Procedure

The following disinfection procedure for cleaned cisterns is recommended:

1. Disconnect or disengage all water treatment equipment such as water filters and softeners from the drinking water cistern.
2. Fill the drinking water cistern to at least one half its maximum holding capacity with potable water ensuring that sufficient capacity remains for the chlorine added in Step 3.
3. Add sufficient chlorine to the cistern to achieve 20 mg/L of chlorine.

If using unscented household bleach (5.25% sodium hypochlorite), add 400 ml (13 fl. on.) of unscented household bleach into the drinking water cistern for every 1000 L (220 imp gal.) of water cistern total volume.

Alternatively, if using industrial strength sodium hypochlorite (12%), add 200 ml (6 fl. on.) of industrial strength sodium hypochlorite into the water cistern for each 1000 L (220 imp gal.) of water cistern total volume.

3. Fill the drinking water cistern to its maximum holding capacity with potable water.
4. Disinfect the associated piping and equipment by pumping the heavily chlorinated water into the domestic plumbing pipe and then opening each faucet and running the water until you can smell the chlorine. Do not run chlorinated water through certain types of water treatment equipment (e.g., softeners, carbon filters, reverse osmosis systems). For specific information, contact your equipment dealer.
5. Leave the chlorinated water in the cistern and in the associated piping and equipment for a minimum of 24 hours to allow adequate time for disinfection. Water MUST NOT BE CONSUMED during this process, as it will contain high levels of chlorine that are unsafe for consumption. This water should not be used for laundry or bathing. An alternative supply of drinking water, such as bottled water, should be used during this period.
6. After disinfection, drain the chlorinated water from the cistern and associated piping and equipment, and thoroughly rinse the system with drinking water.
7. Dispose of the heavily chlorinated water and rinse water appropriately.
8. The drinking water used to refill the drinking water cistern should be of an acceptable bacteriological quality before the cistern is used again.

TABLE 1

Size of tank		Amount of unscented household bleach required to produce 20.0 mg/L total chlorine	
Imperial gallons	Litres	Fluid ounces (imperial)	Millilitres
500	2,270	30	900
1,000	4,540	61	1700
1,500	6,810	91	2600
2,000	9,080	122	3500
2,500	11,350	152	4300
3,000	13,620	183	5200

Disposing of Heavily Chlorinated Water

Caution: Only suitably trained personnel are allowed to dispose of heavily chlorinated water. Handling and use of these chemicals is extremely dangerous.

The heavily chlorinated water from drinking water cistern disinfection and the rinse water should be disposed of in a way that does not harm the environment.

Do not dispose of rinse water or heavily chlorinated water in an onsite wastewater treatment system.

Consult regulatory authorities for acceptable disposal options. Options may include:

· Option 1: Disposal into local sanitary sewers. To dispose of heavily chlorinated water in the local sanitary sewer system, first get written approval from the local sewer department. Heavily chlorinated water must meet the conditions required by the local sewer department. Most wastewater treatment plants use biological treatments to treat the wastewater, which means heavily chlorinated water disposed of in sewage systems could affect water treatment. You may need to de-chlorinate the water before disposal. To do so, follow the guidelines in Option 2.

· Option 2: Disposal into the environment. To dispose of heavily chlorinated water into the environment, de-chlorinate it first by adding the appropriate amount of a neutralizing chemical such as sulphur dioxide, sodium bisulphite, sodium sulphite or citric acid. Add a small amount of the neutralizing chemical while continually monitoring the free chlorine residual in the water. Keep adding the neutralizing chemical until the free chlorine reaches a concentration of less than 1 mg/L. Once the required concentration of chlorine has been achieved, the water can be safely disposed of. Consult Appendix C to estimate how much neutralizing chemical you may need.

Additional information can be obtained from:

The Government of Saskatchewan's website (www.saskh2o.ca) provides additional information on drinking water.

For more information on this fact sheet and/or other drinking water topics, contact your local health region public health inspector at

Estevan Public Health
Box 5000-201
Estevan, SK
S4A 2V6
Tel: (306) 637-3626

Weyburn Public Health
Box 2003
Weyburn, SK
S4H 279
Tel: (306) 842-8618