

Cistern Cleaning

Water in a cistern may not necessarily be clean and potable. Hauled water may already be contaminated and even if the water has been treated, it can deteriorate during storage. Over time, the loss of chlorine residual can lead to microbial re-growth; sediments/sludge can accumulate in the cistern or animals or insects can fall in.

Water from a cistern should be sampled semi-annually for bacteriological quality. If test results show the presence of coliform bacteria both the cistern and distribution system should be disinfected with chlorine². Cisterns should also be pumped clean and chlorinated at least once per year to prevent sludge build up or biological fouling. This frequency may increase if water quality problems develop. Water testing and cistern cleaning should also follow any contamination incident (e.g. flooding, repairs) or following changes in water clarity, colour, odour or taste.

Confined Space Safety Precautions

A cistern must not be entered until you are sure the cistern's air quality is safe. No cistern should be entered unless the person entering the tank has been trained in confined space entry and follows the appropriate safety procedures as per Part 5 of the Province of Alberta Occupational Health and Safety Code. If you have any questions regarding confined space entry safety practices, refer to the Province of Alberta Occupational Health and Safety Code at www.whs.gov.ab.ca or call toll-free 1-866-415-8690. If in doubt, contact a professional trained in confined space entry for information regarding cistern cleaning.

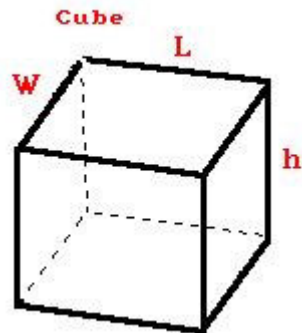
Procedure for Cleaning the Cistern

- Make sure that confined space entry precautions are followed.
- Drain the cistern.
- Use a pressure washer or stiff brush to clean debris and sediment from all surfaces. Remove bottom sludge using a wet-dry vacuum.
- After washing and pumping out the sludge begin refilling the cistern.
- During the filling add household bleach² to make up a disinfection solution of 50 mg/L. Follow the procedures below for cistern disinfection.

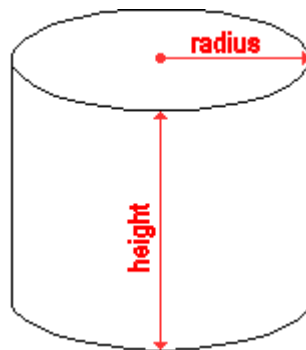
Cistern Disinfection

Procedure for Cistern Disinfection

Calculate how much water is in the cistern. For a box cistern, multiply the length (L) by the width (W) by the height (h), where height equals the depth of water.



For a cylindrical cistern, use $\pi r^2 h$ where $\pi = 3.14$, $r^2 = \text{radius} \times \text{radius}$, and $h = \text{depth of water}$.



- Measurements in cm divided by 1000 gives volume in litres
- Measurements in feet x 6.2 gives volume in imperial gallons

Water treatment devices should be bypassed during the disinfection procedure and the hot water heater power (or gas feed) shut off.

1. Add 1 L of bleach to every 1000 L of water in the cistern (adding while filling the cistern will ensure good mixing). This will provide approximately 50 mg/L of chlorine.
2. Run individual taps connected to the plumbing system until a chlorine odour is detected then close the tap.
3. Allow the chlorinated water to sit in the cistern and plumbing system for at least 6 hours.
4. After 6 hours, the chlorinated water can be dumped to waste in accordance with safe practices. Flush cistern by filling and draining using water from a potable source taking care not to contaminate the cistern.

Highly chlorinated water is unsafe for drinking, unsuitable for domestic or livestock use, and will cause problems if discarded into septic fields.

5. Run each tap for at least five minutes to flush the lines.

6. If the cistern is constructed from concrete, it may be desirable to use at least 3 loads of water prior to drinking the water. The water may still have a 'chalky' appearance and have a slight 'cement taste'
7. The cistern should now be ready for use and can be refilled with potable water from an approved source.
8. Restore power to the hot water system. Service any water treatment devices according to the supplier recommendations prior to bringing them back into service.
9. Resample if cistern was disinfected due to a failed water test. If the lab report indicates the water is still unsafe, the cistern should be emptied and cleaned.

Flooding:

Cisterns that have been contaminated by floodwaters need to be properly cleaned and disinfected. Follow the above 'procedure for cleaning the cistern' and 'procedure for cistern disinfection' prior to bringing it back into service.

For more information, please contact your nearest Environmental Public Health office:

Calgary Main Office 403-943-2295
Lethbridge Main Office 403-388-6689
Edmonton Main Office 780-735-1800
Grande Prairie Main Office 780-513-7517
Red Deer Main Office 403-356-6366

Technical Advisory Committee on Safe Drinking Water, Environmental Public Health