

Water for the World



Maintaining Water Storage Tanks Technical Note No. RWS. 5.O.1

The maintenance of water storage tanks is necessary to ensure the quality of the water stored. Maintenance of tanks basically involves two important procedures: prevention of contamination, and cleaning the tank periodically to ensure that water is fresh. This technical note describes the maintenance of cisterns, ground level storage tanks, and elevated tanks.

By following preventive procedures and by making necessary repairs as soon as possible, good quality water can be assured.

Useful Definition

ALGAE - Tiny green plants usually found floating in surface water.

General Maintenance

Water quality in storage tanks should be preserved. All storage tanks should be checked monthly to ensure that all necessary maintenance is done when needed. Never delay in attending to any problems that arise.

When looking at the tank, make sure to check the following:

- Covers. Make sure the cover fits tightly over the cistern. There should be no space for dust or leaves to enter the cistern or storage tank. The cover should fit tightly enough to prevent the entry of light. Light stimulates the growth of algae in the tank.

- Potential Sources of Contamination. Check the area around the cistern or storage tank to make sure that no contaminants have been introduced to the area. No waste disposal or garbage disposal site

should be near the cistern or storage tank, especially when they are located below ground. Under no circumstances should any disposal sites or animal pens be placed on ground above the cistern. Contaminants can flow downhill and destroy the quality of water. A ditch should be dug near the cistern to direct surface water away from the cistern or storage area. Keep animals out of the drainage area.

- Screens. Check screens covering pipe ends to make sure they are in good repair. Broken screens on outlet and overflow pipes are easy entry points for mosquitoes and small animals. All damaged screens should be replaced.

- Pipes. Check all pipe connections to ensure that there are no leaks in the system. When leaks occur, pipes should be tightened or repaired. Check all valves for proper functioning.

- Structure. Repair any damage that may occur to the cistern or storage tank. Add concrete to repair any chips, broken edges or cracks.

Cleaning the Tank

No matter how much prevention is practiced, a storage tank requires disinfecting and cleaning. Where a cistern which collects rainwater from a roof is the only water source, there may be some difficulty in emptying the tank to clean it. The difficulty is especially great because the supply of water depends on rainfall. The use of a pot chlorinator can solve the problem of the quality of water in the cistern. If a special filter or a foul flush runoff device is installed and a chlorinator is used, the quality of water in the tank will be satisfactory. For information on the use of pot chlorinators see "Designing Basic Household Water Treatment Systems," RWS.3.D.1.

Ground level and elevated storage tanks are much less difficult to empty and clean. Because the source is the constant flow of a spring, well or surface source, the tank can be emptied, cleaned and refilled again. Users should be notified of any decision to close off the flow of water. The cleaning process should not take more than half a day. The tank should be cleaned between peak demand periods. To clean and disinfect the tank do the following:

- Drain all water out of the storage tank. Usually, this is easily accomplished by letting the supply in the tank fall over time and draining the last bit.

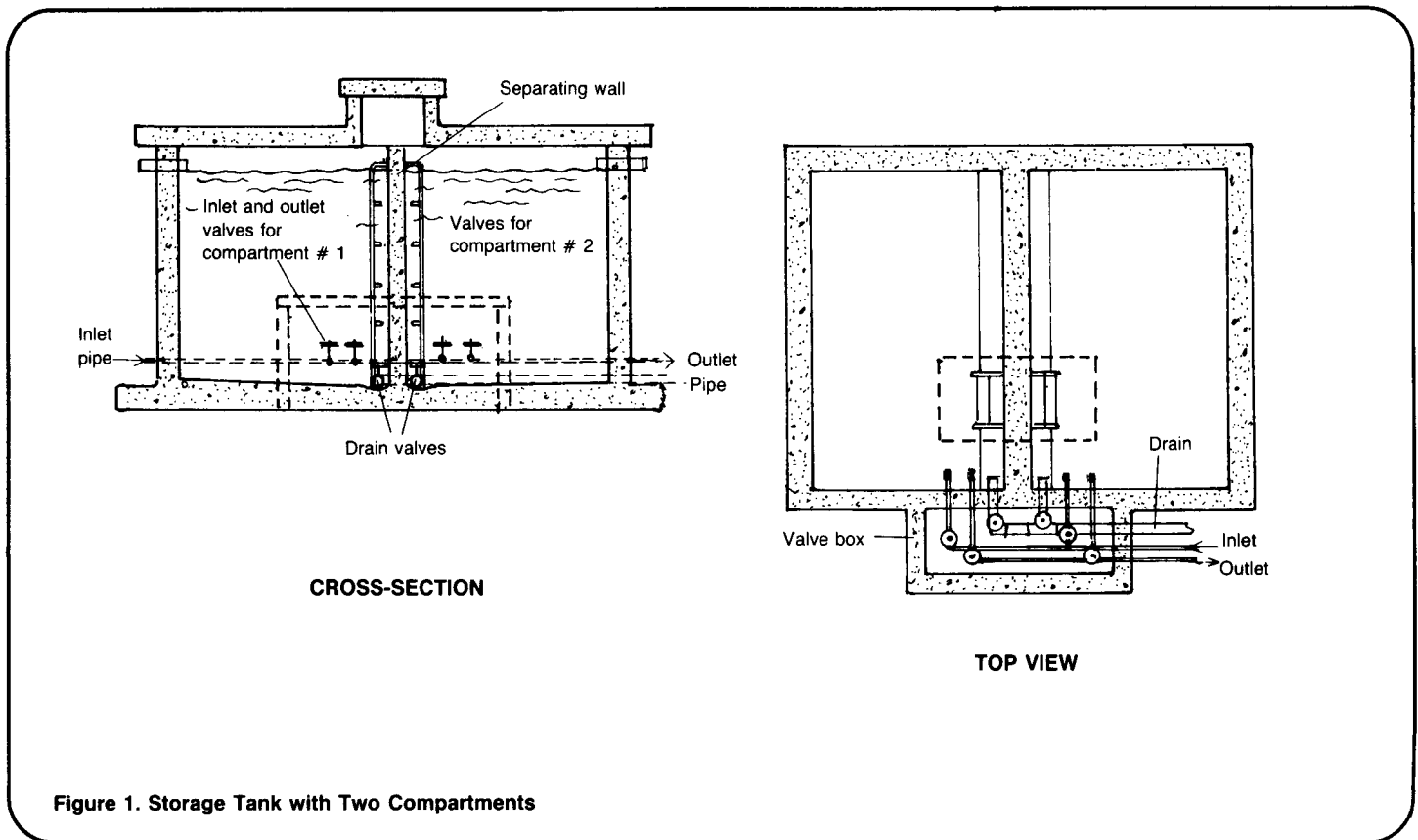
- After the tank is drained, sweep and scrub it until all dirt and loose material are removed.

Then choose the most appropriate method for disinfecting the tank.

- Fill the tank to overflowing with clean water and add enough chlorine to make a 50mg/l solution. Add the chlorine to the tank as it is filling to get sufficient mixing. After the tank is filled, allow it to stand for at least six hours and preferably more. After sufficient time has passed, drain the tank and allow it to refill for regular use.

- A second and faster method can be used when little time is available. Directly apply a very strong, 200mg/l, chlorine solution to the inner surfaces of the tank. For best results, brush the walls with the solution and allow the chlorine to stay on the walls for at least 30 minutes before the tank is refilled.

- Another method can be used but it does not disinfect the upper walls of the tank. Feed water with a chlorine solution of 50mg/l into the tank at a



volume that makes the chlorine concentration only 2mg/l when the tank is full. Keep the chlorinated water in the tank for 24 hours before new water is added. With this method, there is no need to drain the tank.

To avoid some of the problems involved with the cleaning of tanks, a tank with two compartments as shown in Figure 1 can be used. One compartment can be shut down for cleaning while the other is used. There is no problem of an interruption of the water supply. Both small and large storage tanks can use this technique.

Whenever a system must be temporarily closed down for cleaning, the users should be forewarned. This allows storage of extra water and

should lead each person to use less water during the time where the supply is cut down. Cleaning should be necessary only two or three times annually.

Summary

The maintenance of storage tanks, involves two processes: The care of the different parts of the tank and the area around it to prevent the introduction of contamination, and cleaning and disinfecting the tank to ensure the water quality. Proper planning is needed so that a maintenance program is established. Periodic checks of the tanks should be programmed and a schedule for tank cleaning should be established to ensure that maintenance is not neglected.