



Maine Center for
Disease Control and Prevention

An Office of the
Department of Health and Human Services

Maintaining Pipes & Storage Tanks

A Guide for Public Water Systems

Maine CDC Drinking Water Program • 11 SHS Augusta, ME 04333 • 287-2070 • www.medwp.com

The Importance of Maintaining Pipes and Storage Tanks

Storage tanks and a network of piping (also known as a distribution system) are integral to a water system's ability to provide safe, clean water to consumers. If not regularly inspected and properly maintained, contaminants can enter the drinking water through the pipes and tanks or the system could experience low or no pressure. This document is intended to provide guidelines on how to ensure piping and storage tanks remain in optimal working condition so you can continue to provide your consumers with safe drinking water.

Pipes

Leaks and pressure problems



A minimum of 20 psi should be maintained at all times and under all conditions throughout water system

Leaks create a pathway for contaminants to enter the water system. They can also result in water losses which can create unnecessary stress to system infrastructure. Therefore, it is important to know the signs that may indicate a leak. Common signs include an increased demand for water during a time when it is not expected (i.e. the middle of the night or very early morning hours) or if the pump is cycling when no demand is expected.

Positive water pressure within a water system not only helps deliver water to the tap, but also helps keep contaminants out. When there is low or no pressure, contaminants can backflow into the water system. Ideally, standard service to your customers should be no less than 35 psi, and **a minimum of 20 psi should be maintained at all times and under all conditions.** If pressure falls below 20 psi in any part of the water system, the risk of contaminants backflowing into the water system is significantly increased. You should investigate and remedy all unexpected changes in pressure, either too low or too high. The operation of a pressure relief valve may indicate the pressure in a system is too high.

Cross connections and backflow prevention

A cross connection is a physical connection between a source of potable water and a source that is unsafe, potentially unsafe, or undesirable to drink. Cross connections make it possible for potentially hazardous contaminants to enter (backflow) into a drinking water supply. Common examples include: lack of air gap between water feed line or hose used to fill a treatment solution tank and the tank itself; fire sprinkler systems connected to potable water system; and unused equipment or an unapproved source connected into the water system.

Identify and eliminate all cross connections within your water system. If you cannot eliminate a cross connection, then it should be protected with an appropriate backflow prevention device. Approved backflow prevention devices/valves are certified by a recognized organization and permanently labeled. A list of certified backflow devices can be found at <http://fccchr.usc.edu/list.html>. Approval depends on the system characteristics (low hazard, high hazard, back siphonage, back pressure). For more information on determining the type of backflow needed to protect a specific type of cross connection, consult Table 6-2 of the Maine Internal Plumbing Code. Backflow prevention devices should be tested regularly and at least once per year.



A testable backflow prevention device

Protection from Freezing

Make sure your pipes have proper protection from freezing.

- Year-round outdoor piping should be buried below the frost line and/or insulated adequately;
- Seasonal piping should be properly and safely dewatered when not in use; and
- Indoor piping should be in a climate-controlled space (as simple as an insulated building with a space heater) or wrapped in insulation or heat tape.



✓ Protect Your Source

Keep Your Drinking Water Safe:

✓ Take Your Samples

✓ Maintain Your Treatment

✓ Inspect Your Pipes & Tanks

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Tanks

General

Storage tanks should be kept in good condition and inspected for structural issues on a regular basis.

Consider the following:

- Look for signs of rust (metal tanks), spalling concrete (concrete tanks), or cracked foundation (elevated tanks);
- Ensure level controls are functioning properly;
- Check for and remediate any algal or other growth inside the tank;
- Check for sufficient storage to keep up with demands. Short pump cycling may indicate that insufficient storage is present;
- Check contact tanks (for chlorination disinfection) to ensure there is no bypass valve present; and
- Be sure your hydronuematic tank is not waterlogged. Possible signs include:
 - Very short pump cycling;
 - No appreciable noise change from bottom (where water should be) to top (where air should be) when tapping on tank;
 - Sweat line near tank top; and
 - Sight glass almost or completely full of water (conventional hydronuematic tank only).

Overflows and Vents

If not properly maintained, tank overflows and vents can introduce contamination into a storage tank. For this reason, they should be inspected and maintained regularly.

- Look for evidence of insects or animals gaining entry into the tank;
- Ensure that vents are screened properly and that overflows are protected against animals or other contamination entering the pipe (e.g. screening or a flapper); and
- Check that overflows are not draining directly into a sewer, storm drain, or submersed in a body of water.



Tank overflow with screening prevents entry from animals

Security



Security fence with locked gate around wellhead.

An important part of protecting your water system and the health and safety of your consumers is ensuring that your storage tanks are secure and will deter any potential vandalism. Bladder tanks should be kept inside a locked room, while other tanks should be fenced in with a locked gate. Security lighting and cameras add another layer of protection to both deter vandalism and determine when, or if, the security of a tank has been breached. Additionally, access hatches and ports should be locked and access ladders should have protections against unauthorized use.

Projects that aim to increase the security of a public water system are eligible for funding under the Drinking Water Program's Source Water and Wellhead Protection Grant programs. Contact the Source Water Protection Coordinator for more information on these grant programs at 287-5681 or visit www.medwp.com.