

What is Backflow?

Backflow, within the context of the drinking water industry, means the reversal of water flow from its normal or intended direction of flow. Whenever a water utility connects a customer to its water distribution system, the intention is for the water to flow from the distribution system, to the customer. However, it is possible, for the flow to be reversed and flow from the customer's plumbing system *back* into the public water distribution system.

How does Backflow occur?

Backflow may occur simply because the public water system lost pressure. Backflow, reversal of flow from its normal direction, is usually caused by a back-pressure or back-siphonage.

Back-pressure is a condition that manifests itself when the water pressure within a customer's plumbing system exceeds that of the water distribution system supplying the water. This *backpressure* might be caused by a difference in elevation, by a pump in a steam boiler, or by other means.

Back-siphonage may occur when the water pressure within the distribution system falls below that of the plumbing system it is supplying. This might happen due to a fire department truck pumping water out of the distribution system faster than the water treatment plant equipment can replace it. The water rushing downhill due to a broken water main might create a partial vacuum on some plumbing systems connected in the vicinity of the break. Perhaps, simply flushing the water pipes to clean them may cause this phenomenon.

What is Cross-Connection?

A cross-connection is a connection of a potable water system to a non-potable system or a system of questionable water quality.

If cross-connections exist within the user's plumbing system when backflow occurs, it is possible to contaminate the user's plumbing system and the public water system.

Can Cross-Connections be Hazardous?

Yes, contaminated water from a cross-connection can be a health hazard. A few of the contaminants which could enter the water supply caused by cross-connections are:

Untreated river, sea or lake water, pesticides, herbicides, fungicides, propane gas, boiler water with chemicals, anti-freeze, chemicals, water from car wash establishments, dyes, sewage, worms, heavy metals such as arsenic, petrochemicals, water from flush toilets, bacteria cultures from laboratories and others.

This is only a partial list of documented cases of potable water contamination by virtue of cross-connections and backflow occurrences.

How Does the Water Distribution System Become Contaminated?

Where backflow occurs and cross-connections are present you have all of the necessary elements for contamination of the plumbing system and subsequently contamination of the public water system:

For example, suppose an automatic lawn sprinkler system is spraying a lawn when all of a sudden a *back-siphonage* occurs. The resulting backflow from the lawn sprinkler system will flow into the plumbing system and then into the water distribution system. As the water backflows it can suck contamination into the line through the sprinkler heads, such as insects, pesticides, herbicides, fungicides, fertilizers, worms and other contaminants.

What Can be Done to Prevent Contamination of Our Public Water Systems Due to Backflows?

Modern technology has provided us with new tools to prevent backflow from non-potable sources into our public water systems. They are called backflow prevention assemblies; reduced pressure (RP) or double check valve (DC) types.

Unlike the older accepted, non-testable, hardware for preventing backflow such as swing check valves, dual check valves and atmospheric vacuum breakers (which still have their applications), the RP and DC-type backflow prevention assemblies are testable to assure they are in proper working order. Placed at the site of the cross-connection they can protect the plumbing system from contamination. Placed just downstream of a water meter to an establishment, they can protect the public water system from any contamination that may occur within the entire customer's plumbing system.

How Often do Backflow Assemblies Need to be Tested?

All backflow prevention assemblies must be tested at least annually and immediately following any repair, maintenance, or relocation. Assemblies that repeatedly fail may require more frequent testing or replacement.

Who is Responsible for Testing and Maintenance of the Backflow Prevention Assembly?

It is the responsibility of the property owner to ensure the assembly is in good operating condition. A person who is state-certified in backflow assembly testing must perform the test and submit the results to Kearns Improvement District. If any repair work or maintenance is performed, the assembly must be retested immediately. All test results must be submitted to Kearns Improvement District.

Why am I Required to Have My Backflow Prevention Assembly Tested?

Backflow prevention assemblies have internal seals, springs, and moving parts that wear out. Regular testing is required to ensure backflow prevention assemblies are functioning properly and have not been bypassed. A visual check of air gap assemblies is sufficient, while mechanical assemblies must be tested with special equipment.

Who Do I Contact for More Information or Questions?

For more information regarding backflow, cross contamination, or preventing contamination to the water system, please contact John Lawson, Kearns Improvement District Operations Specialist at 801-968-1011.

**At Kearns Improvement District We Strive
to Keep Your Drinking Water Safe.**