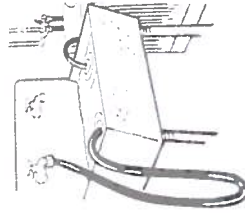


Protecting you and your neighbor from cross connection

Cross connection can occur in any building plumbing that is an integral part of the public water supply system. No public water supply that is connected to a domestic, commercial, industrial, or agricultural private water system is safe from backflow contamination. Therefore we must rely on the combined efforts of consumers, their plumbing experts, water supply operators, health officials, building inspectors, and other specialist to protect the water supply from contamination.

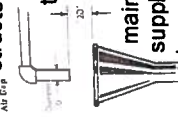
Recognition of common cross-connections is important to eliminating the potential for contamination. You will find some examples of common unnoticed and unrecognized cross connections throughout this brochure.



Example of a hose in a sink or a hose in a washdown trough.
Simply leaving a hose, connected to a faucet, submerged in a sink or any other wash basin, can create a serious health threat. When the faucet is left running, or when it leaks, a loss in pressure of the supply main can siphon contaminating materials back into the potable water system.

Approved Devices Used to Prevent Backflow

AIR GAP The air gap is provided by a minimal unobstructed vertical separation of two times the inside diameter of the water supply outlet between the discharge end of the water supply pipe and the overflow rim of the vessel. An absolute minimum of one inch must always be maintained. Screened protection over the water supply outlet and the receiving vessel are required to protect both water supplies from the entry of insects or vermin.



The one inch minimum separation is required because water can rise above the flood rim due to surface tension and strong suction can draw water toward the suction source.

HOSE BIBB VACUUM BREAKERS This device is an atmospheric vacuum breaker designed for attachment to a hose bibb. It helps to prevent back siphonage through hoses. The hose bibb has the same limitations that apply to atmospheric vacuum breakers. Its one additional limitation is that it can very easily be removed by someone who does not appreciate its importance.



DOUBLE CHECK VALVE ASSEMBLIES A Double check valve assembly consists of two independently operating check valves with supply and discharge shut-off valves and four test cocks. The check valves allow flow only in the normal direction. The double check valve assembly provides adequate protection against both back pressure backflow and back siphonage, but is not adequate for health hazard situations.



REDUCED PRESSURE ZONE ASSEMBLY The reduced pressure zone assembly provides the greatest degree of protection in a mechanical device. It consists of the following:

- 1 Two independent, spring-loaded check valves
- 2 A spring-loaded atmospheric vent valve



- 3 Shut-off valves on the suction and discharge
- 4 Four test cocks

Additional protection is provided by the reduced pressure zone between the two check valves. This creates a pressure gradient within the valve that allows for flow only one direction. The device can be fully tested, and protect against back pressure back flow and back siphonage and will vent to the atmosphere in the event the first check valve fails.

This device, because of its added protection, is considered to be adequate in both health as well as non-health hazardous situations. It is designed to operate under continuous pressure and is the most versatile backflow prevention device.



Example of the siphon sprayer.
Another hazardous temporary cross-connection is the siphon sprayer. With proper operation, high velocity water moving through a narrowed closed conduit, creates a vacuum and draws chemical in to the water stream leaving the sprayer. If there is a large reduction in water supply pressure, a flow reversal may occur drawing the chemical back into the water system. In California, a man died from arsenic poisoning, after drinking from a water hose that he had earlier used with a chemical sprayer.

For more information concerning backflow protection please visit the following web pages:

American Backflow Prevention Association

www.abpa.org

Texas Commission on Environmental Quality

www.tceq.state.tx.us

CROSS CONNECTION DEFINITIONS

Backflow. The undesirable reversal of flow in a potable water distribution system as a result of a cross-connection.

Back Pressure A pressure, higher than the supply pressure, caused by a pump, elevated tank, boiler, air or steam pressure, heat expansion, or any other means which may cause backflow.

Back Siphonage Backflow caused by negative pressure (vacuum) or reduced pressure in the supply piping.

Consumer Any person, firm, or corporation using or receiving water from the public water supply system.

Contamination The presence of any foreign substance organic, inorganic, radiological, or biological) in water which tends to degrade its quality so as to constitute a health hazard or impair the usefulness of the water.

Cross-Connection A physical connection between a public water system and either another supply of unknown or questionable quality, any source which may contain contaminating or polluting substance, or any source of water treated to a lesser degree in the treatment process. Also, any connection by means of which contaminants of any kind can be caused to enter the potable water supply system.

Containment. Protection of the public water supply at the service connection.

Internal protection (isolation) Protection at each water outlet within private plumbing.

Health Hazard Any conditions, devices, or practices in the water supply system and/or its operation which create, or may create, a danger to the public health and well-being of the water consumer.

Non-health Hazard A cross connection or potential cross connection involving any substance that generally would not be a health hazard but would constitute a nuisance, or be aesthetically objectionable, introduced into the potable water supply.

Pollution The presence of any foreign substance in water that tends to degrade its quality as to constitute a non-health hazard or impair the usefulness of the water.

Potable Water Water that is safe for human consumption as defined by the Texas Commission on Environmental Quality.

Water Purveyor The owner or operator of a public, potable water system supplying an approved water supply to the public.

BACKFLOW PREVENTION

Help keep your community water supply safe.

This brochure discusses cross connections of control hazards, shows illustrations of possible cross connections and tells you where to go for more information.



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