

Preventing Cross Connections



Safe Water Is Our Business





You Can Help!

Denver Water is asking you to participate in a program whose purpose is to protect the public health by assisting in protecting our water system from accidental contamination. This program is crucial because of the increased use of the water supply and the potential reuse of waters downstream. The program is called Cross Connection Control.

Why Be Concerned?

Most water systems in America have good source water and/or rigorous treatment plants that produce safe drinking water. Millions of dollars are spent to produce this safe drinking water before it enters the distribution system. Drinking water systems may become contaminated through uncontrolled cross connections that can allow a backflow situation.

Cross connections happen all the time because people are unaware of the problems they can create. They can result in contaminated water or food, industrial and chemical products, illness, and even death. The Colorado Department of Public Health and Environment's (state health department) Colorado Primary Drinking Water Regulations—Article 12 is the regulation that prohibits hazardous connections to a drinking water supply. This regulation also requires Denver Water and all public water suppliers to have a program to protect the public water distribution system from possible contamination.



What is a cross connection?

A cross connection is a physical connection between a potable (drinkable) water supply and a source of contamination or pollution or non-potable source. Under normal operating conditions, Denver's water is kept at high enough pressures to prevent contamination from flowing backwards into the distribution system, even small drops in pressure can change this. Water main breaks, or the use of a fire hydrant can disrupt normal flows or pressures. Under these types of conditions, water can flow in the reverse direction. This is known as *backflow*. Backflow occurs when a backsiphonage or back-pressure condition is created in a water line.

What causes backflow/backsiphonage?

A drop in water pressure in a building or home's plumbing can potentially cause backflow/backsiphonage for a number of reasons. If the shower, clothes washer, dishwasher, processing equipment, or other water-using appliances are all using water at once, the pressure can drop. If there is high water use in the neighborhood, such as from firefighting or a water main (pipe) break, the pressure in your home or business may drop. When water pressure suddenly changes, contaminated water can be siphoned back into the plumbing system through an unprotected cross connection within your home or business.

What Causes Cross Connections cont.

Backsiphonage may occur due to a loss of pressure as described above. A reduction of pressure below atmospheric creates a vacuum in the pipe. If a hose bib was open and the hose was submerged in a non-potable liquid during these conditions, the non-potable liquid would be siphoned into the house or business' plumbing and perhaps back into the public water system. Back-pressure may be created when a source of pressure, such as a pump, creates a pressure greater than that supplied from the distribution system. If a pump supplied from a non-potable source, were accidentally connected to the plumbing system, the non-potable liquid could be pumped into the potable water supply.





Where are Cross Connections Found?

Cross connections can be found anywhere the public supply connects with residential or commercial plumbing systems. Here are some common examples of where cross connections can be found in homes or businesses:

- Toilet tank water can be drawn back into the house water supply if the flush valve doesn't have an anti-siphon device.
- Swimming pools or hot tubs filled using a submerged garden hose can siphon pool water back through the hose into the house/business water supply.
- Insecticide or herbicide dispensers attached to a garden hose can cause chemical-laden water to be pulled up the hose and into the water supply.
- Sprinkler systems lacking proper backflow devices, can enable contaminated water from the lawns that might contain fertilizer, insects and their larvae, mud, or animal droppings, to be siphoned back through the sprinkler heads, and into the water supply.

Cross connections are possible in other places as well:

- Dishwashers, hand-held shower heads, fountains, boilers, in-home water treatment systems, solar heating systems, soaking tubs in laundry areas, filling a waterbed or flushing a car radiator with a hose.

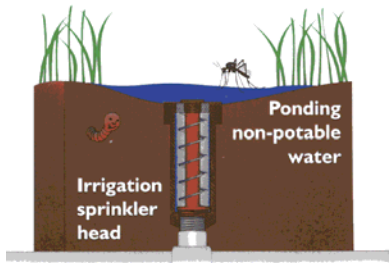


Protection: What can be done?

Homeowners need to be aware of situations where the tap water could contact any non-potable liquid. Don't let cross connections be created if another, safer way is possible. Hose Bibb Vacuum Breakers are inexpensive, simple devices that can be purchased for the outside faucets before attaching to a garden hose.



Hose Bibb vacuum breaker



Another device that homeowners and business owners need to install is an anti-siphon device on the flush valve of their toilets. These devices are also relatively cheap and will greatly aid in the isolation of potential cross connections. All homes and businesses have the potential to contain cross connections. They can be a serious health hazard. Our cross connection control professionals can help identify them and what type of backflow prevention device is needed.



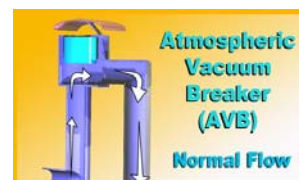
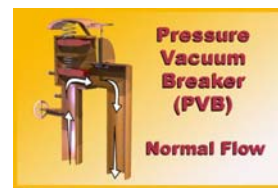
Anti-siphon tank fill valve



The Time Is Now!



Businesses that connect chemicals/fluids with the tap water: chemical manufacturers, restaurants/bars, photo labs, car washes, medical/dental places, food processors, fire systems, buildings over 30 feet, automotive service/repair, auxiliary water sources, pet shops, beauty/barber shops, all have the potential to contaminate the water. Therefore, Denver Water has inspected these businesses to identify, eliminate or protect with the proper devices any cross connections present. Denver Water and the state health department require these businesses to install approved backflow prevention devices and have them tested annually. Examples of backflow prevention methods and approved devices are shown below.





Denver Skyline photo courtesy of the Denver Metro Convention & Visitors Bureau

Denver Water needs your help to protect the safety and integrity of the public water supply. We appreciate your cooperation and assistance in this effort. For more information call Denver Water's Cross Connection Control Office at the number below.

Denver Water

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