



*It is the responsibility of everyone to keep our drinking water safe by doing your part.*

#### Program Contact

For additional information and any questions or concerns regarding backflow and cross connections, please contact our Cross Connection Control Coordinator at (604) 591-4059 or [engwebmail@surrey.ca](mailto:engwebmail@surrey.ca), and visit our website at: [www.surrey.ca/city-services/17713.aspx](http://www.surrey.ca/city-services/17713.aspx).

#### What are the responsibilities for property owners and building occupants?

Property owners and building occupants must ensure that all cross connections are properly protected with the installation of the appropriate backflow preventer. Property owners and building occupants must ensure that all testable backflow preventers are inspected and tested annually by a certified tester.



[www.surrey.ca](http://www.surrey.ca)

HELP PROTECT SURREY'S DRINKING WATER

Industrial & Commercial  
Backflow Protection and  
Cross Connection



## What is a Cross Connection?

A cross connection is a temporary or permanent connection of a plumbing fixture to the buildings drinking water system that contains or may contain substances other than potable water or one that heats or cools potable water.

## What is backflow and what are different types of backflow?

Backflow is a hydraulic condition in the water system that results in water flowing in the reverse direction.

Backflow is caused two ways:

**Back-siphonage** is caused by negative or reduced pressure in the water supply creating a vacuum in the system. This condition is identical to drinking through a straw.

These conditions may be caused by:

- A. Water main break or repair
- B. Hydrant flushing
- C. Firefighting

**Back pressure** is caused when a potable system is connected to a non-potable system that is operating at a higher pressure. Non-potable substances may be forced into the drinking water supply.

Causes of back pressure include:

- A. Booster or recirculation pumps
- B. Boiler or heating systems
- C. Elevated piping or holding tanks, etc.

## What are some common examples of Industrial/Commercial cross connections?

Fire suppression systems, auxiliary water systems, rainwater harvesting systems, lawn irrigation systems, boiler systems, cooling towers, pools and spas, fountains, kitchens, chemical injection systems, ice makers and geexchange systems can all have cross connections.

### *Fire Suppression Systems*

Fire Suppression Systems are generally constructed with non-potable piping materials (iron or steel). The water within these systems become stagnant and the non-potable piping materials corrode over time. Without cross connection control in place, the stagnant water and corrosion can enter a buildings drinking water system under a backflow condition.

### *Heat Exchangers and Geothermal*

Many chemicals are generally added to water in closed loop heat exchange systems and geo-exchange systems. Without cross connection control in place, the chemically treated water can enter a buildings drinking water system under a backflow condition.

### *Pool and Spa*

Many chemicals are generally added to water used in pools & spas. In addition, water in pools and spas can contain microbiological contaminants. Without cross connection control in place, the chemically treated water and/or microbiological contaminated water can enter a buildings drinking water system under a backflow condition.

## What is a backflow preventer?

A backflow preventer is a plumbing device that when installed will provide cross connection control which greatly reduces the likelihood of any back flow. There are three common types of backflow preventers:

**Reduced Pressure Principle Backflow Prevention Assembly (RP):** RP is commonly used as premise isolation or point of use isolation for severe hazard properties, such as auto repair shops, auto body shops, golf courses, and nurseries, etc. RP has to be installed above ground level, to make sure the water can be drained away when backflow happens.



**Double Check Valve Assembly (DCVA):** DCVA is usually used for fireline isolation and premise isolation of moderate hazard properties. Such as corner store, restaurant, office building, etc.



**Air Gap (AG):** Air gap can be used for premise isolation, zone isolation to separate a non-portable system, or an auxiliary water supply like well water.

