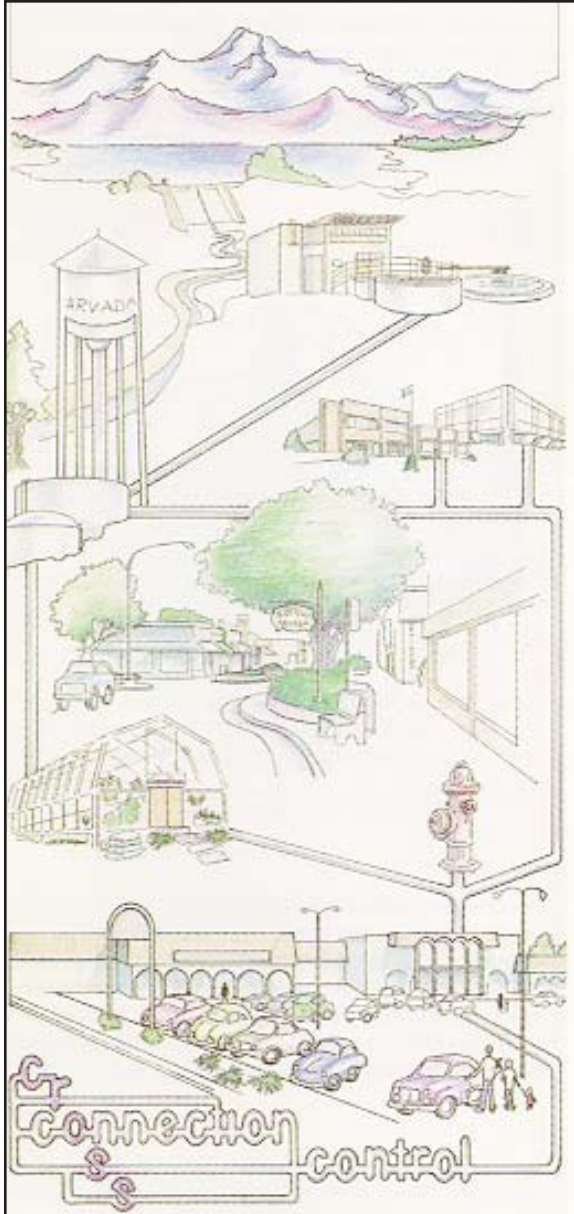




CITY OF ARVADA

Cross-Connection Control Program



The City is asking your cooperation and participation in a program designed to protect our water system from accidents. This program is important because of the growing use of water and the possibility that used water may return to the public supply if certain conditions are present. This program is called **CROSS**

CONNECTION

CONTROL

A cross-connection is a term used in the plumbing and water supply industry to describe a physical connection between the safe drinking water piping and a source of material that could contaminate or pollute the public drinking water system.

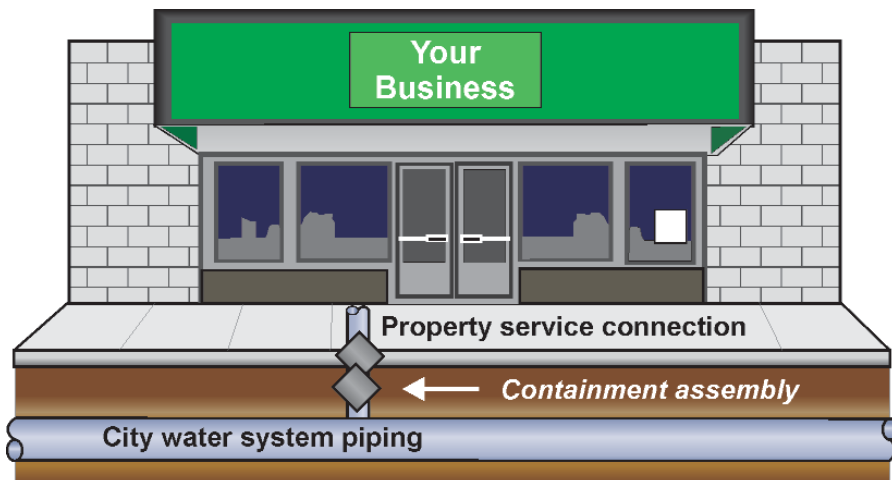
Normally, the utility can supply water with enough pressure to prevent other substances from flowing backwards into the piping system.

However, certain events, like a water main break or fire-fighting, may lower the main pressure enough to allow the water to reverse its direction of flow and actually allow the piping system to drain! You may have experienced this situation if you've ever turned on the tap and had no water flow. This reversal of water flow may be caused by a siphon condition or greater water pressure within your piping system forcing water backwards to the water main in the street.

The Colorado legislature has adopted laws and regulations which prohibit hazardous connections to a drinking water supply. These are demonstrated in the *Colorado Primary Drinking Water Regulations - Article 12*. In addition, the Colorado Department of Public Health and Environment requires water suppliers to have a program to protect the public water distribution system from possible contamination.

The health department regulations require water utilities to protect distribution systems through the use of valves called backflow prevention devices/assemblies. The regulations require that these devices and assemblies be tested and maintained at least annually.

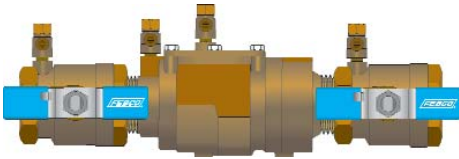
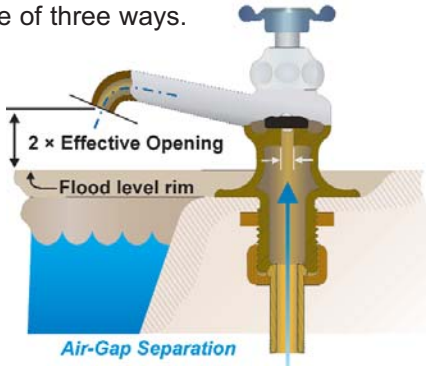
Many of you will be asked to participate in the City's **Containment Protection Program** by installing a special backflow prevention assembly near your water meter at the service connection or immediately inside your building. This containment assembly will prevent the possibility of water or other material from flowing back into the public water distribution system.



City Containment Protection

The type of backflow prevention assembly needed will depend on how the water is used within your plumbing system. Generally, water consumers will use water in one of three ways.

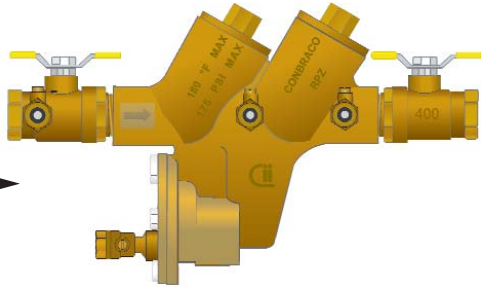
1. Applications where backflow prevention is built in to the points of use such as sinks and sanitary facilities. Example: Air-Gap.



2. Low hazard applications, such as fire sprinkler systems that do not use any chemicals require a Double Check Assembly.

You may be asked to install a double check valve assembly at your automatic fire sprinkler service connection because the fire lines could change the water's quality, color, taste, or odor.

3. High hazard applications where health and hazard conditions exist such as chemical solutions or dual piping systems. Example: Reduced Pressure Principle Assembly.

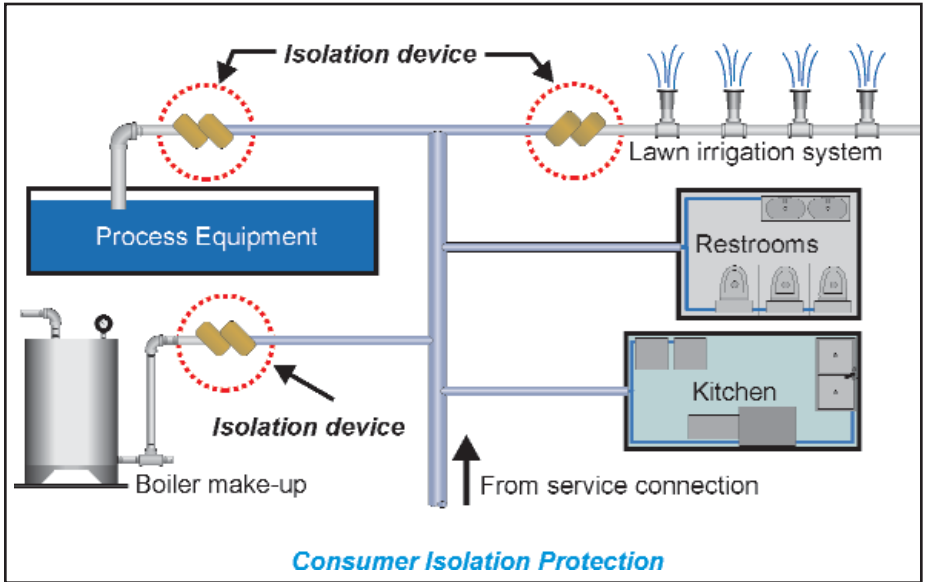


If you mix certain chemicals or add material to the water which creates potentially harmful solutions, you may be asked to install a reduced pressure principle assembly at the water service connection.

Through Arvada's Cross-Connection Control Program, the Public Works - Water Quality Section will determine if an assembly is required. The City will provide you with specifications for installation and testing. Once your backflow prevention assembly is installed, it will be necessary to annually test and maintain the unit to make sure it is functioning properly. The water utility will inform you when such a test will be needed.

Through Arvada's Cross-Connection Control program, the water utility will only contain a consumer's plumbing system at the water meter. In other words, if an accident should occur, the City's water supply will be protected from anything that may flow backwards through the internal plumbing systems pipe into the City's main water pipeline.

It is very important for you, the owner of your plumbing system, to take necessary precautions for protecting your internal plumbing system. This type of protection is called **isolation protection**.



Although your plumbing system may have been constructed with great care in the past, changes in technology and safety concerns may have created the need for additional protection for your system with special backflow prevention assemblies. The City of Arvada's Building Inspection Division can assist you with isolating and protecting plumbing systems within your building.

Isolation protection will be each consumer's responsibility.

It is important to take a few minutes to review this brochure carefully and acquaint yourself with the different types of valves/backflow prevention assemblies available for your plumbing system protection.

The following devices / assemblies are designed to prevent backflow, back siphonage and control cross-connections. Please consult the water utility before installing any type of backflow preventer on your service connection.

Containment or Isolation Assemblies

AS SHOWN ON PAGE 3

Air Gap (AG) - This backflow preventer is a physical break between the water supply piping and a receiving container. This type of backflow prevention may require additional plumbing fixtures for the system to operate properly.

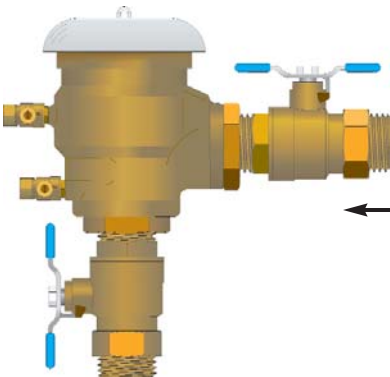
Reduced pressure principle assembly (RP) - As a potential **high hazard** protection assembly, the RP is designed to prevent any material from flowing into the water supply. This assembly will provide protection from all types of backflow for low and high hazard conditions.

Double check valve assembly (DC) - This is a potential **low hazard** protection assembly. The DC will provide protection from all types of backflow for low hazard conditions.

Isolation Only Assemblies

Atmosphere vacuum breaker (AVB)

This is a potential high hazard protection device. The AVB is used to protect the water system from siphonage and **may not** be used with continuous pressure.



Pressure vacuum breaker assembly (PVB) - This assembly provides protection against potentially high hazard situations. The PVB is designed to protect the water system from siphoning material into the water supply, and **may be** used under continuous pressure.

The water utility will protect the quality of water supplied to consumers by asking them to install backflow prevention assemblies at their service connections when needed. The chart below describes types of protective assemblies to be installed on certain types of business establishments.

Containment Program Type of Water Consumer	Assembly Type
Any consumer with a backflow history	AG or RP
Automotive service station or repair shop	AG or RP
Building taller than 40 ft.	AG or RP
Car Wash	AG or RP
Commercial Auxiliary water system	AG or RP
Fire line - no chemicals (New building only)	AG, RP or DC
Fire line - chemicals added	AG or RP
Food processing/packing plant	AG or RP
Greenhouse	AP or RP
Hospital and long-term care facility	AG or RP
Hotel & lodging	AG or RP
Kennel - boarding only	AG or RP
Laboratory - clinical & chemical	AG or RP
Laundry and cleaning service	AG or RP
Manufacturing and industrial facility	AG or RP
Medical office	AG or RP
Morgue and mortuary	AG or RP
School with laboratory	AG or RP
Sewage treatment plant	AG or RP
Shell business development space	AG or RP

SMALLER PLUMBING SYSTEMS MAY REQUIRE THE INSTALLATION OF A PRESSURE EXPANSION TANK OR SPECIAL PRESSURE RELIEF VALVE TO ALLOW FOR EXCESSIVE PRESSURE BUILD-UP WITHIN THE SYSTEM CAUSED BY WATER HEATERS, BOILERS, ETC.

Please note that if you are developing a property and become a new water consumer, it will be necessary to provide water supply protection with the issuance of a Certificate of Occupancy from the Building Inspection Division of the City.

The **Isolation Program** will not be regulated by the City, but are presented here for consideration and assistance in developing individual isolation protection within a building. This chart is provided to offer you some suggestions regarding the type of protective assembly that should be installed on your plumbing fixtures, to protect your drinking water supply.

Isolation Program Type of Water Usage	Assembly Type
Air conditioned cooling tower	RP
Boiler - industrial feed line	RP
Chemical feeder tank	RP
Coffee urn - cooking kettle	AVB
Degreasing equipment	RP
Dishwasher	AVB or PVB
Drinking fountain	Air Gap
Etching tan	RP
Hydro-therapy bath	AVB
Irrigation system	RP or PVB
Ornamental fountain	RP
Re-circulated water	RP
Soap mixing tank	AVB
Ultrasonic cleaner	AVB

It is important for the consumer to be aware of certain types of potentially dangerous connections that can be made to the water system. Care must be taken to insure that these types of connections are properly protected for the safety of your internal plumbing system.

Each type of backflow preventer has certain installation limitations. Consult your plumbing contractor for the proper backflow preventer for your system. This list is not complete. A backflow preventer must be tested upon installation, after any repairs and annually to ensure that it is functioning properly. If you have any questions regarding your plumbing system fixtures or any types of connections to the water distribution system, please do not hesitate to contact Arvada’s Public Works, Water Quality Section at 720-898-7800.

The responsibility for protecting the safety of our public water supply belongs to both the water utility and the consumer. Thank you for your cooperation and interest in the supply of clean, safe drinking water.

**City of Arvada, City Hall
8101 Ralston Road
Arvada, Colorado 80001-8101**

**IF YOU HAVE ANY QUESTIONS REGARDING THE CITY OF ARVADA'S CROSS-CONNECTION CONTROL PROGRAM, WHICH IS DESIGNED TO PROTECT YOU - THE WATER CONSUMER - OR ANY OTHER QUESTIONS REGARDING YOUR WATER SYSTEM, PLEASE CALL THE WATER QUALITY SECTION OF THE UTILITIES DIVISION AT
720.898.7800
FAX 720.898.7603**