What is the City's Cross Connection Control Program?

State regulations require that public water systems develop a Cross Connection Control Program to help protect your drinking water from unprotected connections that may exist in your plumbing system. Our Cross Connection Control Program has four main elements:

- **Survey of each Customer's Property.** This survey asks the customer to look at the plumbing for their water pipes and determine if a cross connection exists. This survey is required at a minimum of every five years.
- **Installation of Protective Backflow Prevention Devices.** This is the requirement for having a backflow prevention device installed where known unprotected cross connections exist.
- **Testing of Backflow Prevention Devices.** Owners of testable backflow devices connected to the public water supply are to have a certified backflow operator perform the required testing. Double check valves and reduced pressure zone devices are to be tested annually while pressure vacuum breakers are to be tested once every five years. A copy of this test result is to be provided to the City Water Department.
- **Public Education Program**. Educating our water customers is a critical element to eliminating all cross connections. This will be done by use of this brochure, our quarterly newsletter and trained personnel who are ready to assist you.

Help is Available.

To assist with completing the enclosed survey, the City is ready to help you with any questions that arise. Please call us for assistance at 630-8047. Our Cross Connection Control Program technicians or your plumber can tell you what type of backflow prevention devices you may need.

What happens if I don't Return the Survey the City mails?

The City's Municipal Code states that it shall be the responsibility of the consumer to conduct periodic surveys *(once every 5 years)* of water use practices at their premises to determine whether there are actual or potential cross connections. When the City mails you a survey, failure to complete and return it will result in the disconnection of water service.

What are Cross Connections?

A plumbing cross connection is when a direct link exists between drinking water and an actual or potential source of contamination. Common household cross connections are hose end chemical/fertilizer sprayers, sewer cleaning devices, boilers and water softener drain lines. Water pipes and plumbing fixtures that make up cross connections can be the link for contamination getting into the water supply.

The result of cross connection contamination is that bacteria, chemicals or poisons may find their way into the water you drink.

What is Backflow?

There are two types of backflow.
Back-siphoning backflow begins when normal flow is reversed due to a vacuum or partial vacuum. Drinking water through a straw is a good example of back-siphoning. Back-pressure backflow is created when the pressure downstream becomes greater than and overwhelms the supply pressure.

For unprotected plumbing cross connections, if water pressure suddenly drops, it can create a vacuum (siphoning) situation that can pull contaminated water or sewage back into the water supply lines.

A drop in water pressure can be caused by in-home plumbing repairs, fire fighting activity, system flushing or water main breaks.

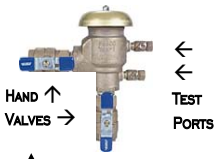
What is a Testable Backflow Device *and…* the Requirements Associated with Having One?

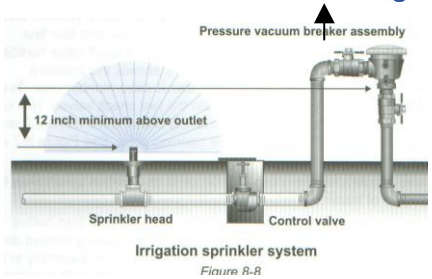
A testable backflow device commonly needed in residential settings is a device that is manufactured with a valve that will close when water reverses direction and will then release any suspect water into the atmosphere rather than allowing it to gain entry into your household plumbing and public water system. They are installed as a protection system on your plumbing in areas where known unprotected cross connections exist. These areas include boiler heating systems, water to air heat pumps, sprinkler systems, swimming pools and hot tubs that are directly connected to your plumbing and the City's public water supply. Examples of a few testable devices have been provided in the following section.

The requirement associated with having a testable device is that the owner have it tested by a certified backflow operator with a copy of the test report being provided to the City Water Department. Double check valves or reduced pressure zone devices are to be tested annually. Pressure vacuum breakers are to be tested once every three years.

Backflow Prevention Devices

Testable Device Pressure Vacuum Breaker (PRV)
Commonly used on swimming pools, hot tubs and underground sprinkler systems.



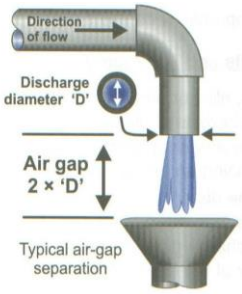


Irrigation sprinkler system
Figure 8-8

Testable Device Reduced Pressure Device (RP)
Commonly used on boilers and water to air heat pumps.

Testable Device Double Check Valve
Commonly used on booster pumps.

Air-Gap
A non-testable device used on water softeners.



Hose Bibb Vacuum Breaker (HBVB)
A non-testable device used on threaded hose connections.

WATER WELLS
Private water wells are sometimes installed for lawn irrigation purposes and are considered a separate source of water. Private wells should not be connected to the City's public water supply system.

Whenever two sources of water are connected on a property, the potential exists for the pressure in one to be greater than the other. A private well with greater pressure could force contaminated water back into the public water system if there is an unprotected cross connection.

SWIMMING POOLS OR HOT TUBS
Built in pools and hot tubs usually are connected with permanent water fill piping. An unprotected cross connection could draw disinfectant chemicals back into your household plumbing system. These should be protected by a testable device like a Pressure Vacuum Breaker (PVB) or Reduced Pressure (RP) Device which are pictured in this flyer.

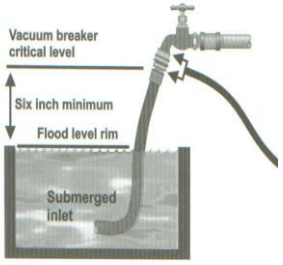
BOILERS
An appliance that heats water to warm the inside of your home is considered a boiler. A hot water heater that heats water only for bathing and clothes washing is not considered a boiler. A boiler should be protected by a Reduced Pressure device because the material used in their construction and water contained in them are not suitable for drinking water.

WATER TO AIR HEAT PUMP
An appliance that uses water to heat and cool the inside of your home is considered a water to air heat pump. This pump should be protected by a Reduced Pressure device.

WATER TREATMENT DEVICES
Water softeners, reverse osmosis units and other forms of water treatment devices like these are required to have an air gap installed on the drain line. If the drain line is simply lying by the floor drain and water backs up into your home, contaminated water could be pulled back into your plumbing system if there is not an air gap installed.

UNDERGROUND SPRINKLER SYSTEMS
Contaminated lawn surface water can be siphoned back into your plumbing system through an automated lawn irrigation system unless a proper backflow device is attached to your system. Either a Pressure Vacuum Breaker or Reduced Pressure device should be installed to protect from backflow. A reduced pressure zone device is to be tested annually. Pressure vacuum breakers are to be tested once every three years.

THREADED HOSE CONNECTIONS
Threaded hose connections include outside faucets, lawn hydrants or any other threaded hose connection except for washing machines and hot water heater drains. Anytime a hose is hooked up using water, and is submerged in or connected to a container with a potentially harmful substance such as lawn and garden chemicals. If there is a sudden drop in pressure, contamination can occur unless a hose bibb vacuum breaker is used. This is a simple inexpensive device installed on the faucet to which the hose is attached. A vacuum breaker is built into all new hose bibbs installed in new housing since 1992.



Hose connection installation

Example of an Actual Incident
Date of Backflow Incident: July, 1993
Location of Incident: Coos Bay, Oregon
Source(s) of Information: Pacific NW Section of AWWA, Summary of Backflow Incidents, Fourth Edition, 1995.

The occupants of a house in Coos Bay, Oregon, installed an auxiliary water system that consisted of irrigation piping supplied by water pumped from a drainage pond. The water in this pond was probably highly contaminated because it flowed from a fill area previously used for septage disposal. Eventually, the pump at the drainage pond failed. While the pump was at a repair shop, the wife noticed that the lawn needed watering, so she connected a hose from the house's potable water system to the irrigation piping. The husband returned with the repaired pump, installed it, and turned it on. The pump forced pond water through the hose connection, through the house's potable water system, and into the public water system.

Fortunately, a water meter reader was at the house at the time the water from the drainage pond was pumped into the public water system. The meter reader notified his office, and water system personnel isolated the contaminated portion of the public water system.

City of Scottsbluff
Nebraska

CROSS CONNECTION CONTROL PROGRAM

LET'S PROTECT OUR WATER SUPPLY

Program Regulations
State of Nebraska, Department of Health & Human Services, Title 179

City of Scottsbluff Ordinance #3261, 1992