



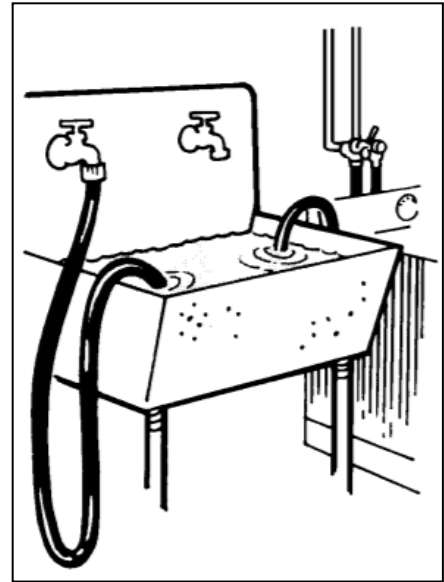
## IMPORTANT INFORMATION

### Regarding Cross Connection Control (Non-Residential)

#### What is a backflow?

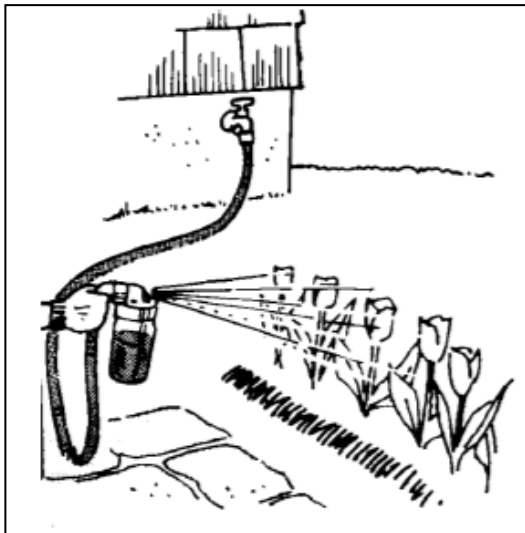
The term “backflow” means any unwanted flow of used or non-potable water or substance from any domestic, industrial or institutional piping system into the pure, potable water distribution system. The direction of flow under these conditions is in the reverse direction from that intended by the system and normally assumed by the owner of the system.

Backflow may be caused by numerous specific conditions; but, basically the reverse pressure gradient may be due to either a loss of pressure in the supply main called backsiphonage, or by the flow from a customer's pressurized system through an unprotected cross-connection, which is called backpressure. Thus the term backflow covers both a backsiphonage condition and a backpressure condition.



#### What is a “cross connection”?

A reversal of flow in a distribution main (or in the customer's system) can be created by any change of system pressure wherein the pressure at the supply point becomes lower than the pressure at the point of use. When this happens in an unprotected situation the water at the point of use will be siphoned back into the system; thus, potentially polluting or contaminating the remainder of the customer's system.



It is also possible that the contaminated or polluted water could continue to backflow into the public distribution system. The point at which it is possible for a non-potable substance to come in contact with the potable drinking water system is called a “cross-connection”.

*A cross-connection is a direct arrangement of a piping line which allows the potable water supply to be connected to a line which contains a contaminant. An example is the common garden hose attached to a sill cock with the end of the hose lying in a cesspool. Other examples are a garden hose attached to a service sink with the end of the*

hose submerged in a tub full of detergent, supply lines connected to bottom-fed tanks, or supply lines connected to boilers.

### How do we protect our public water system?

To prevent backflow from occurring at the point of a cross-connection a backflow prevention assembly must be installed. However, it is important the backflow prevention assembly match the particular hydraulic conditions at that location and is suitable to protect against the degree of hazard present.

The five basic products (in order of protection) are:

- Air Gap – **BEST METHOD!**
- Reduced Pressure Zone Assembly (RP) – **BEST DEVICE!**
- Double Check Valve Assembly (DCV)
- Pressure Vacuum Breakers (PVB)
- Atmospheric Vacuum Breakers (AVB)

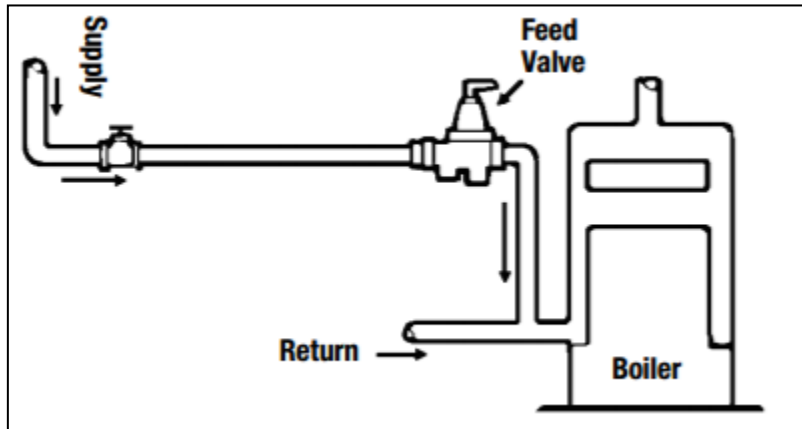
BACKFLOW PREVENTION		CROSS CONNECTION TYPE		
		Indirect		Direct
		<i>Backsiphonage Only</i>		<i>Backpressure &amp; Backsiphonage</i>
		<i>Continuous Use</i>	<i>Non-Continuous Use</i>	
DEGREE OF HAZARD	Health Hazard	Air Gap	Air Gap	Air Gap
		RP	RP	RP
		PVB	PVB	---
		---	AVB	---
	Non-Health Hazard	Air Gap	Air Gap	Air Gap
		RP	RP	RP
		DC	DC	DC
		PVB	PVB	---
		---	AVB	---

### Typical Example of Backsiphonage:

When a temporary shutdown of a water main becomes necessary for repairs, if the repair is at some point other than that of the highest point in the system, then there will be a potential for a reverse flow if one of the lower points of service is opened while the main valve is closed. Under this condition the water in the internal piping system will drain to the open valve or point of water use, siphoning anything it may be in contact with at the time. The same could occur if there is a stoppage of water supply due to nearby firefighting or mainline break. The affect is similar to sipping of a soda by inhaling through a straw, which induces a flow in the opposite direction.

### Typical Example of Backpressure:

Backpressure backflow is created whenever the downstream pressure exceeds the supply pressure which is possible in installations such as heating systems, elevated tanks, and pressure-producing systems. An example would be a hot water space-heating boiler operating under 15-20 lbs. pressure coincidental with a reduction of the



city water supply below such pressure. As water tends to flow in the direction of least resistance, a backpressure backflow condition would be created and the contaminated boiler water would flow into the potable water supply.

### Why does HUB have a Cross Connection Control program?

Cross Connection Control is required by law!

Pursuant to Section 68-221-711(6) the installation, allowing the installation, or maintenance of any cross-connection, auxiliary intake, or bypass is prohibited unless the source and quality of water from the auxiliary supply, the method of connection, and the use and operation of such cross-connection, auxiliary intake, or bypass has been approved by the Department. The arrangement of sewer, soil, or other drain lines or conduits carrying sewage or other wastes in such a manner that the sewage or waste may find its way into any part of the public water system is prohibited.

All community water systems must adopt an ordinance or policy prohibiting all of the above and submit a copy of the executed ordinance or policy to the Department for approval. All community water systems shall develop a written plan for a cross-connection control program to detect and eliminate or protect the system from cross-connections. The written plan must be approved by the Department.

After adoption and approval of the cross-connection ordinance or policy and plan, each community water system must establish an ongoing program for the detection and elimination of hazards associated with cross-connections. Records of the cross-connection control program must be maintained by the water supplier and shall include such items as date of inspection, person contacted, recommendations, follow-up, and testing results.

### What are HUB's Backflow Requirements for customers?

All new commercial customers are required to install a Reduced Pressure Backflow Assembly (RP) on their domestic and/or irrigation water service. For a fire service, a Double Check Detector Assembly (DC) must be installed. If a fire system contains anti-freeze compounds or any other chemicals, then a

Reduced Pressure Detector Assembly (RP) is required. Other metering options are available for fire services. Please call (865) 882-3242, ext. 253 for more information.

In commercial or industrial situations, water often comes in contact with different types of hazardous substances, whether it be for mixing, diluting, flushing, or cleaning. State law requires that certain businesses be surveyed for potential cross-connections and that proper backflow assemblies be installed to protect the public water supply. HUB's Water Department surveys manufacturing plants, hospitals, mortuaries, dental offices, dialysis centers, veterinary clinics, doctors' offices and many other businesses in order to identify potential hazards to the water system.

We evaluate backflow requirements for businesses on an individual basis when a water account is established. Businesses that have a potential backflow hazard present must install the appropriate backflow prevention assembly and have it tested annually.

*If a backflow assembly is already installed:*

If the commercial property already has a backflow preventer assembly, it must be tested annually by our HUB's Certified Backflow Tester. We will notify you when it's time for your backflow assembly to be tested.

*If you are required to install a backflow assembly:*

We will notify you by mail if a backflow preventer must be installed. The letter will include instructions on which type of backflow preventer to install and installation guidelines.

Be sure to install it according to the State's installation guidelines. We recommend hiring a professional plumber to install the backflow preventer. Provide the installer with a copy of the letter and accompanying information. HUB is not responsible for plumbing corrections or delays in obtaining or continuing water service due to faulty backflow assembly installations.

Backflow devices must be tested upon Installation. Contact a third-party Backflow Tester from the State Certified Backflow Tester List to test the backflow assembly. The tester must submit the results to us.

Backflow devices must be tested annually by HUB's Certified Backflow Tester. We will notify you when it's time for your annual test.

**For more information on Cross Connection Control or questions regarding your requirements to install or maintain a backflow device, please contact:**

**Candace D. Vannasdale, P.E.**  
Manager of GWS Administration & Engineering  
[cvannasdale@hub-tn.com](mailto:cvannasdale@hub-tn.com)  
Phone: (865) 882-3242, ext. 249

**James Neeley**  
Cross Connection Control Coordinator  
[jneeley@hub-tn.com](mailto:jneeley@hub-tn.com)  
Phone: (865) 882-3242, ext. 253