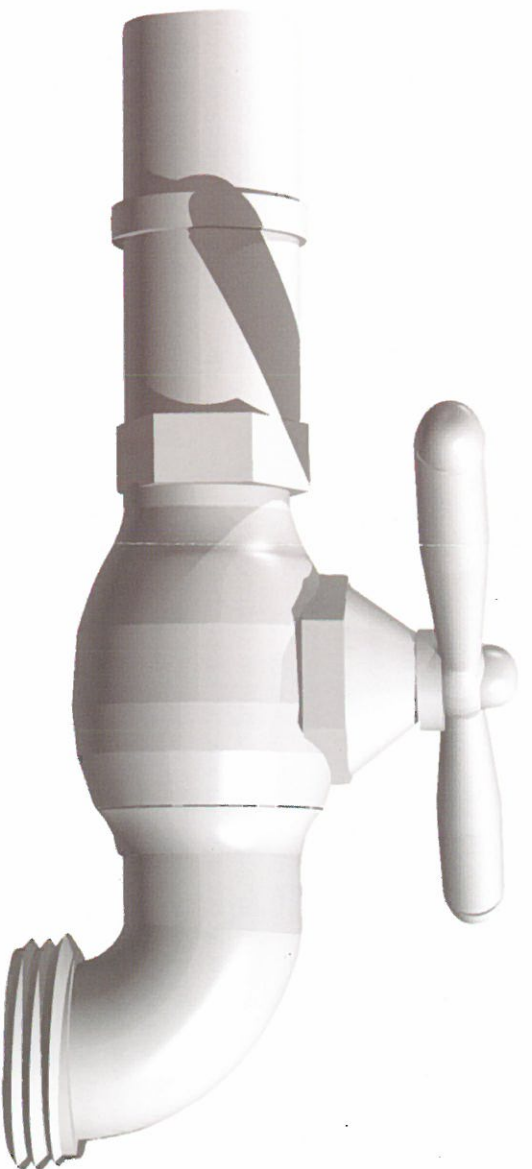
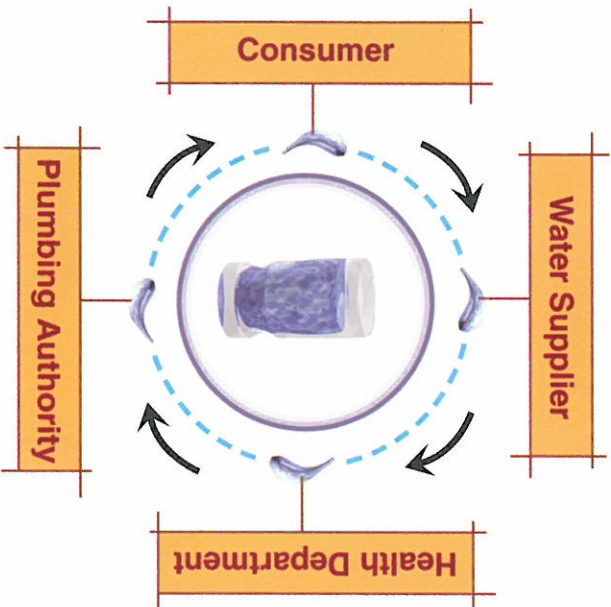


With cooperation, a comprehensive cross-connection control program keeps a purified water distribution system free from objectionable impurities and health hazards.

Water suppliers across the continent take great pride in the fact that the water they deliver to the consumer is consistently pure and healthful. One reason for this is a comprehensive cross-connection control program which enables the water suppliers to protect the drinking water at any point in the distribution system.



**WORKING
TOGETHER FOR
SAFE
WATER**

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Consumers can expect the water provided to them by their water supplier to be pure and healthful. Water suppliers across the continent spend millions of dollars to purify and treat water before it is delivered to the consumer. However, many consumers are not aware that the water supplier also expends great effort to protect the water from the possibilities of contamination or pollution while it flows through the distribution system. It is possible for this to occur when a water supply line is connected to equipment containing a non-potable (unfit to drink) substance. A make-up water line may be connected to a tank filled with acid, or a hose may drop into a bucket of cleaning solution. These connections, called *Cross-Connections*, whether they are permanent or temporary, would be dangerous if no protective measures were taken.

Water distribution systems are designed with the intention of the water flowing in a certain direction, from the distribution system to the consumer. However, hydraulic conditions within the system may deviate from the "normal" conditions, causing the water to flow in the opposite direction in unprotected systems. This is called *backflow*.

Backflow occurs when the pressure in the distribution system drops, siphoning water from the consumer's system into the distribution system. This would also siphon any substance which may be in contact with the water system through a cross-connection. This type of backflow is called *Backsiphonage* and may occur when there is an unusually high use of water or undersized piping in an area. For example, during fire fighting, or when a main water line breaks, water is "sucked" to the point of high usage, possibly drawing non-potable substances with it, filling the water line

with these substances. Backsiphonage may occur through cross-connections such as a hose from a maintenance sink in mop bucket, or a below-the-rim water inlet to a tank containing a toxic solution.

Some water customers have non-potable materials on the premises under pressure. When an unprotected water line is attached to the container or pipes holding the pressurized material, the material may be "pumped" back into the potable water system. This type of backflow is called *backpressure*. Backpressure may occur through a cross-connection such as a make-up water line which is connected to a recirculating system containing soap, acid, antifreeze or any non-potable substance.

Because of these potential dangers to the water consumer it is necessary to control cross-connections. There are several types of mechanical assemblies which serve as *Backflow Preventers*. Different types of backflow preventers are designed to work under backsiphonage or backpressure conditions. Some are acceptable for high hazard conditions while others are only acceptable for low-hazard (or non-health hazard) conditions.

Most of these backflow preventers have been tested using stringent specifications in the laboratory and in the field by the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California. Those which successfully passed the tests have been granted Approval by the Foundation. Approved backflow preventers are extremely dependable.

Federal law requires water suppliers to protect their water systems from contamination or pollution. To do this, water suppliers diligently conduct surveys of various facilities on their systems. Through these surveys the water or health authority (which may be working in conjunc-

tion with the water agency) determines which type of backflow protection is necessary to protect the water system.

It is very important that a strong cross-connection control program be maintained, in order to protect the purity of the drinking water. To accomplish this, the water supplier, health department, plumbing authority and consumer must work together. The water supplier and health department may carry out cross-connection control surveys, not only to determine what may be needed to protect the distribution system from contamination or pollution: but, also to determine what may be needed to protect the water system *internally*.

The consumer, on the other hand, must be aware of

cross-connections and prevent them, or protect such connections with the appropriate backflow preventer.

These backflow preventers must be tested at least once each year, to ensure that they are performing properly in preventing backflow. When necessary they must be repaired in order to assure proper operation.

