



Integrated Resource Management, Inc. (IRM) is comprised of water resource professionals with extensive experience providing solutions to water and wastewater issues in both the private and public sectors.

IRM was established as a resource consulting firm dedicated to providing practical problem-solving techniques to water-related issues. During the past 14 years, IRM has worked with a variety of companies to provide resource evaluation, development and security of resources for the future. IRM has also dedicated its staff to the ongoing development of emerging technologies related to water and wastewater conveyance, treatment and disposal.



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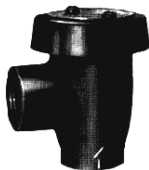
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Public and Private
Water Management Consultants

What is Backflow?

Backflow is a general concept as simple as the name implies: water flowing back in the direction opposite the one intended. Water flow is determined by natural or artificial pressure through a particular water system.

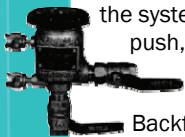


A properly engineered system is designed to maintain that pressure through its myriad pipes and connections. Also, variations in usage patterns require constant management of the water system (for instance, the morning surge in a system when everyone turns on their showers).



A potential backflow incident could occur at this cross-connection.

Nevertheless, incidents can occur that are beyond the control of water system managers. A sudden flow of water out of a system—possibly due to a break in a water main or the unauthorized opening of a fire hydrant—can cause water farther along in the pipes to be sucked backward, or **backsiphoned**, into the system. Also, an overactive pump can push, or **backpressure**, water backward through the public water supply.



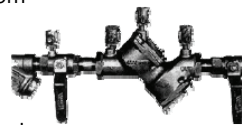
Backflow by itself is not a danger, but when combined with a cross-connection it can be deadly.

What is a Cross-Connection?

Cross-connection, like backflow, is a descriptive term: a connection that crosses between clean and unclean or contaminated water. While there have been incidents when wastewater was piped directly into a freshwater system, most cross-connections occur when an intake water pipe is merely in contact with the site of water usage—a fertilizer spray nozzle attached to a garden hose, or a faucet submerged in a full sink. If a backflow incident occurs while even these incidental and seemingly innocent

cross-connections are in place, then it is possible that harmful and even lethal chemicals will be sucked back into the water system, injuring an employee or ending up in your products.

Imagine the chemicals and by-products produced or used by your facility being fed back into the local water main, or into your own internal water system. Imagine the harm to your facility's image in the community, let alone the physical danger to your employees, customers and neighbors. It is no wonder, then, that multiple regulatory agencies and industrial trade groups strongly advise industrial facilities to adopt internal, comprehensive **Cross-Connection Control Programs**.



Why do I need a Cross-Connection Control Program?

Cross-connection control (CCC) is **regulated by federal, state and local government agencies**, but enforcement is almost always left to local officials. Most municipalities already have or soon will have an ordinance-mandated CCC Program for your local water system. These programs require commercial or industrial facilities to be surveyed for potential cross-connections and proper installation as well as testing of backflow prevention devices.



It is important to understand and label the piping in your facility.

However, according to the United States Environmental Protection Agency in 2002, "Program requirements vary widely between states" and may consist of "various regulations, including the drinking water regulations, health code, plumbing code, policy decision of the utility itself and building codes. A 1993 U.S. General Accounting Office report on the review of 200 sanitary surveys and a nationwide questionnaire of states

identified inadequate cross-connection control programs as the most common deficiency."

Some municipal programs are satisfied if a facility merely has a properly functioning device where water enters the facility—these are called "containment" or "service protection" pro-



grams. Other programs, known as "last free-flowing outlet" programs, have additional requirements for internal water system connections. Beyond municipal regulations, many **trade groups and professional associations** demand that corporate members or certified



This backflow prevention device is below grade and could result in a fine.

facilities institute cross-connection and backflow prevention regimes for industrial facilities that exceed regulatory requirements.

Whether a facility is regulated by one of

these types of municipal programs—or no program at all—it is *always* the responsibility of the water consumer to install, test and maintain **backflow prevention devices**, as well as to guard against unnecessary and potentially dangerous cross-connections in its water system. An internal, facility-specific, industrial CCC Program ensures consistent compliance with municipal and industrial regulatory standards.



A reduced pressure principle (RP) backflow prevention device and pressure gauge.



At IRM, we are committed to the safety and security of your water system.

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