

Developing and Implementing a Cross Connection Control Program

I have noticed lately that more and more systems are being found deficient on the sanitary survey from KDHE for their cross-connection control program. I am not sure if it is being enforced more stringently or systems have become more lax in its enforcement. It has been a state law since 1982 and it was amended in 1995. It is now KAR 28 – 50. The law states that all water purveyors must have an ordinance/bylaw on the books and enforce the law. The EPA has determined that the water purveyor is responsible for the quality of the water to the last free flowing tap.

The water purveyor is responsible for enforcing whatever program it has in place. KDHE has given wide latitude as to how water systems establish rules concerning cross connection control policies. In this article, I hope to provide suggestions but the rules a system wants to enforce is at the local discretion.

The only person allowed to test a backflow device are those that are certified testers. KRWA conducts numerous training sessions for cross connection control, backflow prevention. This is a tester/repairman’s course as well as the first two days being provided without cost to anyone as informational. The full 4-day course is to become registered and consists of hands on and written exams. Those wishing to renew their license attend only the last two days, they too must pass the written and hands on exam. KRWA has held the fee at \$150 for license renewal and \$225 for those taking all four days of training. If a water system has several backflow preventers in operation in the system, it would be worth the money for the system to purchase the necessary testing gauges and test the devices with system staff. KRWA also otherwise maintains a list of those trained as tester/repairmen on the KRWA website at <https://krwa.net/TRAINING/Backflow-Device-Testers>.

Gauges need to be calibrated at least annually, and can be subject to more frequently as deemed by the water purveyor. It is also suggested that the backflow devices are tested at least once a year. Some places like hospitals and industrial buildings with high risk substances could be tested more often. Again, this is up to the water purveyor.

What is a cross connection? A cross-connection is a physical connection between two separate piping systems;

one containing potable water and the other containing water of questionable safety. Backflow can allow drinking water in plumbing systems to become contaminated and unusable.

What is a controlled cross connection? “No person shall install any water operated equipment or mechanism, or use any water treating chemical or substance, if it found that such equipment, mechanism, chemical or substance may cause pollution or contamination of the domestic water supply. Such equipment or mechanism may be permitted only when equipped with an approved backflow prevention device or assembly.”

Operation and maintenance requirements

According to Kansas regulations, each person who operates a public water supply system shall ensure that the system is operated, maintained, and supervised by certified personnel. Each community water supply system shall be

operated and maintained to provide a minimum positive pressure of 20 psi throughout the distribution system, except under extraordinary conditions including unusual peak fire flow demands and major distribution system breaks. If pressure falls to or below 20 psi, KDHE needs to be notified and a possible boil advisory will be put into effect. Each person who operates a community water supply system and each person who operates a high-risk non-community system shall have a regular program

(sanitary survey) for the detection and elimination of cross connections and prevention of backflow and back siphonage.

There are two types or degrees of cross connections. High hazards are those where the contaminant could be toxic, which would lead to an impairment of the quality of the potable water. That creates an actual hazard to the potable water through the spread of disease.

A low-hazard pollutant, or non-health hazard would define an impairment of the quality of the potable water to a degree which does not create a hazard to the public health, but which does adversely and unreasonably affect the aesthetic qualities of such potable water for domestic use. In common language, it affects taste, odor, color.

The only person allowed to test a backflow device are those that are certified testers.

Back siphonage happens when water is subjected to negative pressure, usually from an open faucet or line break. Water always wants to equal out to zero pressure.

Back pressure is when a condition that occurs to water upstream to overpressure water downstream. A boiler heating up water will cause the water to expand and create pressure, a tall building will put down-pressure on the pipe as well.

Some common types of backflow prevention devices are:

- **Air gap** – which is the best backflow preventer possible. There is nothing to test and there is no paperwork. Must be installed two times the pipe diameter never less than one inch above the receiving vessel. Can protect both low and high hazard situations.
- **Reduced pressure zone assembly (RP)** must be tested once a year, installed properly above ground and not in a pit. Will freeze if not protected. Continuous use. Can be installed on low and high hazard.
- **Pressure vacuum breaker (PVB)** must be tested once a year, installed properly above ground twelve inches above highest point in the system. Will freeze if not protected. Continuous use. Back siphonage only, no back pressure. Can be installed on low and high hazard.
- **Spill resistant vacuum breaker (SVB)** must be tested once a year, installed properly above ground twelve inches above highest point in the system. Will freeze if not protected. Continuous use. Back siphonage only, no back pressure. Can be installed on low and high hazard.
- **Atmospheric vacuum breaker (AVB)** cannot be tested, installed properly above ground six inches above highest point in the system. Will freeze if not protected. Non-continuous use. Back siphonage only, no back pressure. Can be installed on low and high hazard.
- **Double check valve assembly (DC)** must be tested once a year, can be installed in a pit. Continuous and non-continuous use. Low hazard only.

Types of Control

There are two ways of controlling backflow on the customer's property. They are "containment" and "isolation."

Containment means installing a backflow prevention device at the entrance to the premise. This protects the water purveyor's supply but does not protect the water in the system beyond the device.

Isolation is the protection from cross-connection problems at each tap. Isolation, cross-connection control,



KRWA conducts numerous cross connection/backflow prevention training courses annually. In this "pre-Covid-19" photo, those who were recertifying prove their ability to test devices.

protects the consumer's domestic water supply. This is the program Kansas law requires.

I have always participated in the backflow prevention, cross connection control training. Attendees nearly always comment that they learned something new each time they attend. If you have any questions feel free to contact me at 785-258-0642 or email me at bret@krwa.net. Instructor Terry Randles is always also glad to answer questions. His contact information is 785-221-5815 and email address is tgrandles@gmail.com. KRWA staff members also have a lot of knowledge on the subject, especially Stewart Kasper who will be helping with cross connection training in the future.

Bret Beye joined the KRWA staff in March 2017. He previously worked for 30 years at the city of Herington where he was Water Distribution and Sewer Collection Foreman. A Class III water operator and certified as a backflow device technician, Bret also served on the USD 487 Board of Education from 2003 to April 2017 where he was board president and vice-president.

Salina Supply Company

• Mueller Waterworks • Badger Meters
• Smith-Blair Clamps • Pumps • Pipes • Valves
• Fittings • Chlorination Equipment

Contact:
Jessi Kerchal
Blaine McAfee
Mark Zimmerman

Wholesale Plumbing, Heating, Air Cond. & Municipal Supplies
302 N. Santa Fe • P.O. Box 5100 • Salina, KS 67402-5100
(785)823-2221 • (800)288-1231 • Fax (785)823-3532