

## Addressing Crossflow and Backflow

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How much backflow protection is necessary? That is one of the questions we constantly face in the plumbing profession. For more than 100 years, the plumbing profession has protected the water supply by implementing protection from backflow and back siphonage. The medical profession has even recognized that measure taken by the plumbing industry, not medicine, has resulted in the dramatic reduction of waterborne diseases in the United States.

More recently, that question regarding protection of the water supply has arisen with the shut down of buildings during the pandemic. As the water has aged in the piping systems, do we need additional measures to protect the drinking water?

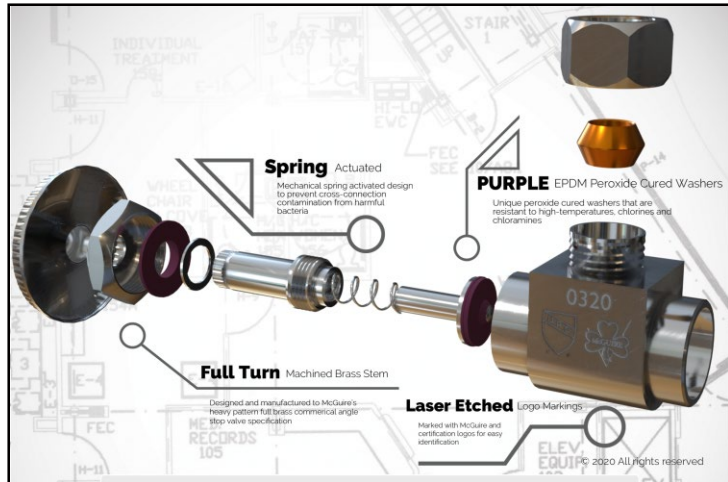
Add to the issue of backflow protection the concern for crossflow. Crossflow has plagued the plumbing profession in recent years with the increased use of flow restrictors and diverter valves.

I received a call from a local hospital regarding a major problem during a medical procedure. The instrument being used was cooled by water supplied from a connection to the cold water piping system. During the procedure, the doctor, luckily, noticed the water temperature rising, thus stopping use of the instrument. Upon investigation, it was found that a service sink in a janitor's closet was on the opposite wall of the room in which the procedure was being done. The service sink faucet had a wye connection screwed to the outlet with one opening going to the chemical dispenser and the other going to a hose to fill a bucket. Both the hot and cold faucet were left in the "on" position with the flow controlled by the wye fitting shut off. During the procedure, the cold water dropped in pressure, allowing the hot water to crossflow to the medical instrument, thus increasing the water temperature.

This is an example of a typical situation that occurs all too often in a plumbing system. In hospitals and medical facilities, this can be disastrous. In residential buildings and hospitality facilities, crossflow can also lead to scalding.

McGuire Manufacturing Company, located in Cheshire, Connecticut, recognizes the problems of crossflow and backflow and has invented an angle stop to help solve these problems. Their newest product to hit the market is the ICV Defender Integral Check Valve. This new product incorporates a spring activated check valve into a McGuire's heavy duty angle stop. Thus, the angle stop not only provides convenience to shut off the supply of water to a fixture, it also prevents the reversal of flow in the piping system.

The ICV Defender series of angle stops are listed to ASME A112.18.1/CSA B125.1, NSF 372, and NSF 61. As listed angle stops, they comply with the ICC International Plumbing Code, IAPMO Uniform Plumbing Code, IAPMO National Standard Plumbing Code, and the National Plumbing Code of Canada.



In addition to ASME A112.18.1/CSA B125.1, the check valve in the ICV Defender was tested to ASME A112.18.3. This is the standard that specifies performance requirements for backflow protection devices used in plumbing fixture fittings. The standard lists aggressive age testing to determine the performance of a backflow device after years of service. The standard requires backflow protection to be accomplished by a minimum of two backflow devices, one of which must be a check valve.

Having passed ASME A112.18.3 as a backflow check valve, the ICV Defender can serve as one form of backflow protection for hose connected outlets and handheld showers. Being rated as a backflow protection check valve also means that the ICV Defender Integral Check Valves will prevent crossflow when supplying the hot or cold water to a faucet or fixture fitting. The ICV Defender is a simple solution to a complex problem. Hot water will not flow to the cold water piping and cold water will not flow to the hot water piping.

There are many applications for the ICV Defender Integral Check Valves. Plumbing engineers will immediately view the valves as an added level of protection for any hospital or health care facility. These buildings always rely on providing additional levels of protection for the public and patients. Any crossflow or cross contamination of the water supply can be prevented. Similarly, plumbing contractors see the need in schools and food handling establishments to also provide higher levels of protection of the potable water supply.

The Covid pandemic brought to light the concerns with shutting down a major building for a long period of time. Office buildings, schools, hotels, motels, and restaurants were closed for months. All during this time, the water system remained full of stagnant water. Concerns were raised regarding water aging and the possible dissipation of treatment chemicals used to maintain the potability of the drinking water. Many engineering and scientific organizations emphasized the importance of flushing the water supply before reopening these shutdown buildings. Every opening has been identified as needing to be flushed of stagnant water.

While water aging and chemical dissipation was identified for shutdown buildings, a similar impact on the water supply can occur in the supply to rarely used fixtures or seasonal buildings. The ICV Defender will prevent the backflow of stagnant water into the water supply of the building from fixtures that have minimal use. These rarely used fixtures will flush the stagnant water remaining in the piping between the angle stop and the faucet or fixture fitting during the next use of the fixture.

In residential buildings, including hotels and motels, there are many plumbing fixtures that are used on a limited basis. The ICV Defender can prevent flow reversal from these rarely used fixtures. This will prevent any possible contamination from aged water.

When the ICV Defender was developed by McGuire Manufacturing Company, their intent was to address issues related to high risk areas, such as hospitals, health care facilities, food handling establishments, hospitality facilities, and educational buildings. They can also be used in any building for any plumbing fixture connection.

The ICV Defender will provide additional peace of mind regarding protection of the potable water supply when installed as the angle stop for every plumbing fixture in the building.