



City Water Backflow Prevention and Its Importance to Your Health

When one draws water from the faucet in their home or in a building they probably don't know that there is a city water protection device in place within the facility or just outside to avoid contaminate water getting into the city water system. This cross-connection between the public water system in the street and buildings and homes is a source for domestic water needs, but is also a potential contamination point under certain conditions.

Back in the 1970's and before then, there were numerous reported incidents of contamination of the city/domestic water system resulting from backpressure of water inside a building reversing its flow going out instead of in, leading to contamination of the city water system in the street. This is called a direct-cross connection and the water of concern is defined as potable water meaning it's safe to drink e.g., tap water.

In potable systems, water is normally maintained at a significant pressure to enable water to flow from the tap, shower, or other fixture. Water pressure may fail or be reduced when a water main bursts, pipes freeze, or there is unexpectedly high demand on the city water system e.g., when several fire hydrants are opened. This reduced pressure in the pipe may allow contaminated water from the soil, from storage, or from other sources within a building or home to be drawn back into the city water system.

Initial attempts to eliminate this problem were the application of a check valve, which controls flow



but are not absolute. This device incorporates a metal flapper inside the valve that was intended to allow water to flow in one direction. If a reverse of direction of flow occurred the water pressure moving in this opposite direction would apply pressure to the check valve flapper pushing against it and closing the check valve, which in turn stopped this reverse flow. Unfortunately something as small as a particle of dirt in the water can get lodged under the flapper, resulting in the reverse water flow continuing to flow back e.g., out into the city water pipe main.

Eventually a manufactured backflow preventer was developed and the National Plumbing Code embraced this technology requiring these devices be installed where city water enters a building, as

well as where potable water piping is connected to a secondary water system that has been chemically treated e.g., process cooling system to prevent freezing e.g., heating pipes, to protect the interior of the piping wall surface from corrosion, etc.

This type of product has been certified by a third party to be compliant with the “Safe Drinking Water Act” which was first passed by Congress in 1974 to protect the public health by regulating the nation’s public drinking water supply and has been amended a couple of times to address the protected drinking water and its sources e.g., rivers, lakes, etc.

Potable water system backflow preventers are required to be tested annually depending on the State, city and/or town. The individual doing the test should be certified to perform the test and complete a report for the water department, as well as provide the building owner with a copy of the report. The cost for a backflow preventer test will vary depending on the pipe size, pipe type/material, device location, assembly size and type, and availability to drain the water during the test.

Other examples of contaminating the potable water system within a building or home resulted from 1970’s reported incidents of back-siphonage where a change in water pressure resulting in a pulling affect e.g., siphoning chemically treated water from a bucket drawn through a garden hose with one end in the bucket and the other end connected to the outside water faucet. The results were the treated water in the bucket was introduced back into the potable water inside the home or building. This is called an indirect-cross connection.

A simple and very reliable backflow preventer, with its “air gap” as part of the manufactured device open, a vertical space between any device that connects to a plumbing system e.g., outdoor faucet connected to a sprinkler hose

The application of these backflow preventers have had a significant and positive impact on protecting humans from drinking contaminated water that one would not knowingly realize when they drew water from their kitchen faucet for a drink or to use in cooking.

Contact a member of the Diocese of Cleveland Facilities Services team for any assistance contacting pre-qualified plumbing contractors or water testing service providers.

For more information:
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