Town of Greenfield

Cross Connection/Backflow Control Program

What is a cross-connection?

A **cross-connection** is any actual or potential physical connection or arrangement between a pipe conveying potable water from a public water system and any non-potable water supply, piping arrangement or equipment including, but not limited to, waste pipe, soil pipe, sewer, drain, other unapproved sources.

What is backflow?

Backflow is the flow of water or other liquids, mixtures, or substances into the distribution pipes of a potable water supply from any source other than the intended source. There ate two types of backflow: backpressure backflow and back-siphonage.

What is backpressure backflow?

Backpressure backflow is a form of backflow due to pressure created by mechanical means or other means which causes water or other liquids or substances to flow or move in a direction opposite to that which is intended. Backpressure backflow is caused by a downstream pressure that is greater than the upstream or supply pressure in a public water system. Backpressure can result from an increase in downstream pressure, a reduction in the potable water supply pressure, or a combination of both.

Causes of increases in downstream pressure: Pumps (such as wells and booster pumps), elevated tanks, temperature increases in boilers, etc.

Causes of decreases in downstream pressure: Water line flushing, fire fighting, or breaks in water mains.

What is back-siphonage?

Back–siphonage is a form of backflow due to reduced or sub-atmospheric pressure within a water system. Back-siphonage is caused by a negative pressure (i.e., a vacuum or partial vacuum) in a public water system. The effect is similar to drinking water through a straw. Back-siphonage can occur when there is a stoppage of water supply due to a nearby fire fighting, a break in a water main, etc.

What is a backflow preventer?

A **backflow preventer** is a testable or non-testable cross connection control device which prevents potential pollutants and contaminants from flowing into the public water system.

What is an air gap?

An **airgap** is an unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or faucet supplying water to a tank, plumbing fixture, or other device and the flood level rim or the receptacle. This separation must be at least twice the internal diameter of the water supply pipe and never less than one inch. An air gap is considered the maximum protection available against backpressure backflow or back-siphonage but is not always practical and can easily be bypassed.

What is a reduced pressure zone assembly?

A **reduced pressure zone assembly** is an approved testable backflow prevention device incorporating: two or more check valves; an automatically operating differential relief valve located between the two checks; two shut off valves; and necessary appurtenances for testing.

A sprinkler/irrigation system that has a chemical feed requires this device. It is also commonly used in commercial establishments to protect against numerous contaminants. These devices must be installed above ground.

What is a double-check valve assembly?

A **double-check valve assembly** is a testable backflow prevention device that incorporates an assembly of check valves, with shut-off valves at each end and appurtenances for testing.

For instance, sprinkler/irrigation systems are required to be protected by these devices. They are normally installed near the meter in an underground box.

What is an atmospheric vacuum breaker?

An **atmospheric vacuum breaker** is an approved backflow prevention device used to prevent back siphonage which is not designed for use under static line pressure.

What is a pressure vacuum breaker?

A **pressure vacuum breaker** is an approved backflow prevention device designed to prevent only back siphonage and which is designed for use under static line pressure.

What is a hose bibb vacuum breaker?

A **hose bibb vacuum breaker (HBVB)** is one of the least expensive and most commonly used backflow preventers. When attached to an outside water tap, these backflow preventers keep water that may be contaminated with fertilizer or insecticide from entering your drinking water.

You should attach an HBVB if you have a sprayer on your hose.

Why do backflow preventers have to be tested periodically?

In order to insure the proper operation of a backflow assembly, it must be tested and certified upon installation and periodically thereafter as required by state code.

If the hazard (substance you are protecting against) is considered a high hazard (i.e., a hazard that can cause health problems), the State requires that the device be tested twice a year.

Why does a soft drink dispensing machine require backflow protection?

Soft drink dispensers (post-mix carbonators) use carbonated water mixed under pressure with syrup and water to provide soft drinks beverages. Many, if not most water pipes are made of copper. When carbonated water comes into contact with copper, it chemically dissolves the copper from the pipe. This copper-carbonate solution has been proven to be a rick to the digestive system.

Examples of backflow incidents that can occur are:

Lawn chemicals backflowing (backsiphoning) through a garden hose into indoor plumbing and potentially into the distribution system.

Backsiphonage of "blue water" from a toilet into a building's water supply.

Carbonated water from a restaurant's soda dispenser entering a water system due to backpressure.

Backsiphonage of chemicals from industrial buildings into distribution system mains.

Backflow of boiler corrosion control chemicals onto an office building's water supply.

For backflow device testing, facility surveys, appointments and other cross connection specific questions, please contact the town's consultant:

Greenfield D.P.W
Water Facilities Div.
413-772-1539

For more information, please see the following websites:

http://www.epa.gov/safewater/crossconnectioncontrol/index.html

http://www.mass.gov/dep/water/drinking/systems.htm#crosscon