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Residential Cross-Connection Prevention

What is a Cross-Connection?

A “cross-connection” is any actual or potential connection between the public water supply and a source of contamination or pollution. Common examples of this would be: having the garden hose attached to a faucet with the other end submerged in a tub of detergent; using a hose to apply lawn fertilizer or insecticide; or connecting to a secondary water source, such as a well or pond, while already having a city water supply present. That is a cross-connection.

What is Backflow?

Backflow is a reversal in direction of the normal flow of water in a piping system. This can be caused by backpressure or backsiphonage. Negative or reduced pressure in water supply piping causes backsiphonage in much the same way as you do when you drink through a straw. The potential for backflow due to backpressure exists wherever there is a heating system, elevated tank or other pressure producing equipment. If the pressure is reduced, the flow in the supply piping may be reversed. Contaminants may enter the public drinking water system through a cross-connection when backflow occurs.

What hazards does backflow cause?

Backflow due to cross-connections is a serious plumbing problem. Water within your property may be in contact with many different types of fixtures including lawn irrigation systems, fire sprinklers, washing machines, garden hoses, kitchen sinks, tubs, showers and toilets. For industrial users, water may be used in boilers, photo processing equipment, chemical mixing tanks, chillers, water reclamation devices, pressure pumps, medical and laboratory equipment, etc. An actual or potential direct connection between any of these fixtures and the potable water system is a cross-connection, and a potential source of pollution or contamination. The installation of a backflow preventer will protect drinking water systems from a possible contamination from irrigation systems.

Types of Backflow Prevention

There are three methods of residential backflow protection allowed by the MCSE to protect the drinking water system from possible contamination from irrigation systems and any other potential points of cross-connection. These methods are Pressure Vacuum Breaker (PVB), Double Check Valve Assembly, and Reduced Pressure Principle Assembly (RP).

Do you have a Lawn Irrigation System?

Irrigation systems are considered non-potable and are classified as High Hazard for backflow because of the bacterial and chemical contaminants found on lawns. These systems must have an approved backflow prevention device. The MCSE recommends an approved Pressure Vacuum Breaker (PVB) as a minimum level of protection. 3745-95-06(C)(3) of the Ohio Administrative Code requires each device to be tested, at the homeowners expense, at least once every calendar year with a due date of July 31st.

Who can Install and test backflow preventers?

Approved backflow prevention assemblies must be installed by licensed plumbers and contractors. Installation must comply with local and state plumbing codes and MCSE rules and regulations. Only a person who is a certified backflow prevention device tester, registered with Ohio Department of Commerce, may inspect and/or test backflow prevention assemblies.

Frequently Asked Questions

Why do I need backflow protection?

Irrigation systems are considered non-potable water systems. Backflow protection stops animal waste, fertilizers, herbicides and pesticides from entering your drinking water system.

How can irrigation water enter my drinking water system?

The most common way contaminated water enters a drinking water system is by backsiphonage. This can occur when water pressure is reduced during times of high volume use i.e., a shower, clothes washer and dishwasher all operating at the same times.

How does backflow protection stop contamination?

A properly installed and maintained backflow preventer will allow water to flow in only one direction.

Why must I have my backflow preventer tested?

Backflow preventers, like cars, are mechanical assemblies that, if not maintained, will not perform properly. 3745-95-06(C)(3) of the Ohio Administrative Code requires each device to be tested.

Which type of backflow preventer is best?

Each type of backflow preventer will protect from backflow if properly selected, installed and maintained. It is important that the right type of protection be used based on site conditions

How much does a backflow preventer cost?

Cost depends on the type of backflow preventer required and installation cost, so it is best to check pricing with various plumbers.



Typical installation of a Pressure Vacuum Breaker (PVB) on a residential lawn irrigation.