4.8 Testing of Backflow Assemblies

RPZs, PVBs and DCVAs are all testable backflow *assemblies* and must be tested by an approved tester at certain frequencies to ensure that they are in good working order. Any backflow preventer that is designed to be tested is considered an *assembly*, and all assemblies shall be tested at any of the following circumstances.

1. At time of installation or relocation. This includes reinstallation of seasonal assemblies that are taken out of service for a period of time and reinstalled.

2. After a repair.

3. At a frequency determined by the public water system in accordance with the approved local cross connection control program.

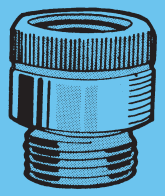
Items No. 1 and No. 2 are required by the Michigan Plumbing Code. Item No. 3 is a required element of the local cross connection control program which must state how often backflow assemblies shall be tested. A 1991 Memorandum of Understanding between the DEQ and the Michigan Department of Labor and Economic Growth (DLEG) clarifies that public water supplies under the jurisdiction of Act 399 shall establish the frequency for testing of backflow assemblies in their respective service areas.

Currently, all assemblies must be tested at least once every 5 years. **However, effective January 1, 2011, the minimum frequency that backflow assemblies must be tested is going to be reduced from five (5) to three (3) years. All water systems must make certain that their approved cross connection control program reflects this change by 2011.**

What can be done?

Homeowners, as well as plant managers, business persons, administrators, and school officials, must share the responsibility to protect potable water piping systems from contamination through cross connections. Each should contact either the local water utility or the local health department for assistance in locating and correcting cross connection hazards. Residents supplied by private water well sources must assume total control of their water system and safeguard it from contamination. In many instances involving residential cross connections, the installation of a hose bib (faucet) vacuum breaker can prevent backsiphonage of contaminants and provide adequate protection of the homeowner's water system, and consequently, the utility's water system.

This means equipping each outside hose connection and hose connections in the basement and laundry room with a simple and inexpensive vacuum breaker. These devices can be obtained from hardware stores or plumbing shops for approximately $10 each. In other instances, more elaborate protective devices may be necessary. For those situations, assistance in determining what device is appropriate may be needed.



Questions concerning cross connection control and backflow prevention may be directed to:

- Michigan Department of Environmental Quality
  Office of Drinking Water and Municipal Assistance
  517-284-6514;
- Michigan Department of Licensing and Regulatory Affairs
  Bureau of Construction Codes
  Plumbing Division
  517-241-9330;
- Your local health department or your local water department.

Prepared by: Michigan Department of Environmental Quality
www.michigan.gov/deq

Cross Connections

Protecting our Public Water System

A cross connection is an arrangement of piping that could allow undesirable water, sewage, or chemical solutions to enter your drinking (potable) water system as a result of backflow. Cross connections with potable piping systems have resulted in numerous cases of illness and even death.

Historically, cross connections have been one of the most serious public health threats to a drinking water supply system and many times are present in a residential water system.

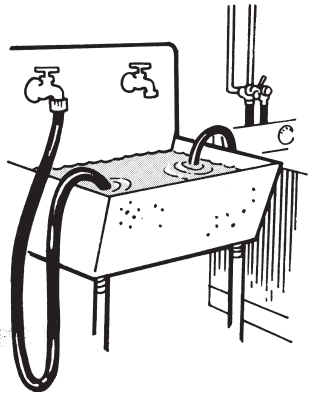
Michigan Department of Environmental Quality
Office of Drinking Water and Municipal Assistance

Rev. 8/2014

What is backflow and how can it occur?

Backflow is the reversal of normal flow in a system due to backsiphonage or backpressure.

Backsiphonage backflow occurs when a vacuum is induced on a piping system, just like drinking from a glass with a drinking straw. A garden hose or a hose connected to a laundry tub can act as a "drinking straw" allowing undesirable liquids to be drawn through it by backsiphonage. Some typical situations that cause backsiphonage action include:



- watermain breaks or repairs occurring in the system at a point of lower elevation than your service point.
- high water flow rates exerted on a watermain due to fire fighting, hydrant flushing, large system demands or major piping breaks.
- booster pumps taking direct suction from potable water supply piping.
- undersized piping.

Whenever the drinking water supply system is directly connected to another piping system or process that operates at a higher system pressure, backpressure backflow can occur.

Typical causes of backpressure backflow include:

- nonpotable piping systems equipped with pumping equipment (irrigation well interconnected with a potable system, for example).
- steam or hot water boilers.
- heat exchangers.

What is the law?

Cross connections with potable piping systems are prohibited by state plumbing codes. Additionally, Michigan water utilities are required to have a cross connection control inspection program of their water customers to eliminate and prevent cross connections. Common commercial and industrial users posing a public health threat include:

- industries with private wells.
- industries with chemically treated boilers.
- plating operations, chemical processing plants.
- funeral homes, mortuaries.
- marina facilities.
- hospitals, nursing homes.
- research laboratories.
- car washes, laundromats.
- school facilities.

Most utilities have made inspections of these facilities and have had corrective action taken where necessary. However, due to a lack of staff resources, many utilities cannot effectively carry out a residential cross connection inspection program. Consequently, residential water users could remain a potential health threat to the public water supply system and to other system customers.

What hazards threaten the homeowner?

Many common household uses for water pose a public health threat to the potable water supply system whether the home is supplied by municipal water or by a private well. Principal areas of water use in the home that pose a threat due to cross connections are:

- a hose connection to a chemical solution aspirator to feed lawn/shrub herbicides, pesticides, and fertilizers.
- lawn irrigation systems.
- chemically treated heating systems.
- water softeners.
- hose connections to a water outlet or laundry tub.
- swimming pools.
- solar heating systems.
- private nonpotable water supplies.
- noncode (siphonable) ball cock assemblies in toilets.
- water-operated sump drain devices.

This list of potential cross connection hazards is by no means complete. A private residence that has one or two of these situations is seriously jeopardizing its own potable water system and that of the community if it is served by a public water supply system.