

## WHAT DOES THE LAW SAY ABOUT CROSS CONNECTION?

Part 14 of the Michigan Safe Drinking Water Act, 1976 PA 399, as amended (Act 399) and the Administrative Rules contain the cross connection rules that public water systems must follow regarding cross connection control. The City of Warren Cross Connection Ordinance Chapter 41-33, adopted these regulations and requires the following:

- Install a backflow assembly if there is an existing or potential cross connection.



- Have the backflow assembly tested after installation, then annually, and/or if the assembly is moved or repaired.
- A state-certified backflow tester must perform the test and send copies of the backflow prevention assembly test report to the City of Warren, Water Division. The assembly must work properly to pass the test.
- Repair the backflow prevention assembly if it is not working properly. Have a certified tester re-test the assembly after repairs.

### The City of Warren Water Division must:

- Set up and maintain backflow assembly records on water services located inside their distribution system.
- Enforce all state and local laws regarding backflow assembly installation. This includes ensuring that owners test the assemblies each year.
- Send annual test notices to backflow assembly owners.



*WORKING TOGETHER TO BUILD  
A STRONGER COMMUNITY*



*Keep Our Water Safe*



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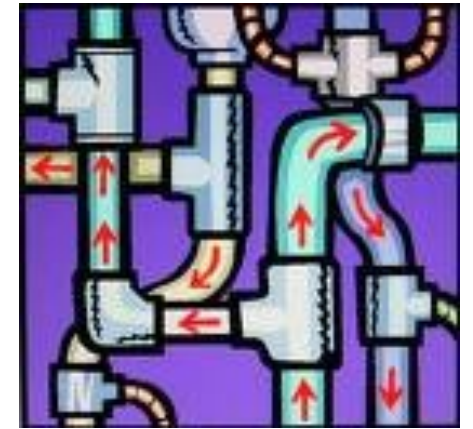
*For more information on  
Cross connections, contact the  
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# CROSS CONNECTION PROGRAM



***What you need to know about  
backflow prevention and keeping  
our water safe***

### What is a Cross Connection?

*A cross connection is a connection or arrangement of piping or appurtenances through which backflow of non-potable water could flow into the public drinking water supply.*

(Part 14 of the Michigan Safe Drinking Water Act, 1976 PA 399)



# Residential Cross Connections

## What is a cross connection?

A cross connection is a direct or potential arrangement of drinking water piping that is or can be connected to a questionable source.

An example is the common garden hose submerged in a swimming pool or bucket of detergent or other contaminated water. When the proper conditions occur, water can flow backwards (backflow) in a piping system allowing contaminated water to flow into the drinking water through a cross connection. There are two ways that contaminated water can backflow into the drinking water: back-siphonage or backpressure.

## What is back-siphonage?

Back-siphonage can be created when there is stoppage of the water supply due to repairs or breaks in the municipal water main or increased demand at a location such as fire-fighting.

## What is backpressure?

Backpressure is the reversal of normal flow in the water system due to downstream pressure being greater than the supply pressure.

## Basic methods or products for protection against cross connections & backflow.

- Atmospheric vacuum breakers: hose bib vacuum breakers.



- Pressure type vacuum breakers



- Reduced pressure principle backflow preventers



## Examples of cross connections and backflow contamination

- Soapy water or other cleaning products back-siphoned into your water supply plumbing through a faucet or hose submerged in a bucket or laundry basin.
- A hose submerged in a swimming pool creates a pathway for pool water to enter your water supply plumbing.
- Fertilizers and/or pesticides back-siphoned into your water supply plumbing through a garden hose attached to a fertilizer / pesticide sprayer.
- Bacteria / chemicals / additives present in a boiler furnace system back-siphoned into the water supply plumbing.
- Filling of any bulk water tank without the proper air gap separation from the tank and supply hose.

## Important measures to prevent backflow

- Maintain air gaps. Do not submerge hoses or place them where they could become submerged.
- Use hose bib vacuum breakers on fixtures (hose connections in the basement, laundry room and outside taps).
- Make sure toilets have anti-siphon ball-cock assemblies.
- Install an approved, testable backflow prevention device at your home's water service connection.
- Do not create a connection between an auxiliary water system (well, cistern, or other body of water) and the water supply plumbing.

# Commercial-Industrial Cross Connections

## Cross connections in businesses!

A cross connection occurs whenever a potable drinking water line is directly or indirectly linked with a non-potable piece of equipment or piping. Examples of non-potable equipment typically found in a business include dishwashers, hood washers, wash basins, service sinks, post mix beverage dispensing machines, cooling towers, heat exchangers, ice makers, irrigation systems, fire sprinkler systems, decorative ponds, X-ray equipment, medical/laboratory aspirators, photo processing equipment, etc

## Business owner's liability!

Businesses are responsible for all unprotected or inadequately protected cross connections on their premises and liable for any damages or illnesses they may cause. In cases where business owners have been proven at fault for cross connection contamination events, judges and juries have awarded plaintiffs substantial monetary damages.

## What is my responsibility as a business owner?

Your business facility must be surveyed by City of Warren Water Division to determine if any cross connections exist. Your cooperation is needed at the time of the site survey. A person familiar with the plumbing system is needed to walk through the premises with a city inspector. Each cross connection must be eliminated or properly protected by an appropriate backflow preventer. All work done on the internal plumbing system of your facility must be performed by a master plumber. Any changes to your plumbing must be approved by your local plumbing inspector and the city as necessary.

## How can a cross connection contamination event occur?

Non-potable water or chemicals used in equipment or a system can end up in the drinking water line as a result of backpressure or back-siphonage.

Backpressure occurs when the pressure in the equipment or system such as a boiler or air conditioning unit is greater than the pressure inside the drinking water line.

Back-siphonage occurs when the pressure in the drinking water line drops (due to fairly routine occurrences such as main breaks, nearby fires, unusually heavy water demand, etc.) and contaminants are sucked out of the system and into the potable water lines.

## Have things like that ever happened?

Yes, they have, and all too often despite the efforts of local water suppliers. There are several cases of backflow incidents documented. The problem is not just cross connection of chemical and bacteriological potential. Gases and air have also caused damage physically to water systems, home and buildings.

## What is the cost of providing adequate cross connection in a business?

The typical cost of a needed backflow prevention assembly will vary in price depending on the size and type of the assembly. Since a backflow preventer may be the only barrier between your customers and contaminated water, your investment in installing and keeping the equipment maintained is minimal compared to the potential liability of a backflow incident.

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