

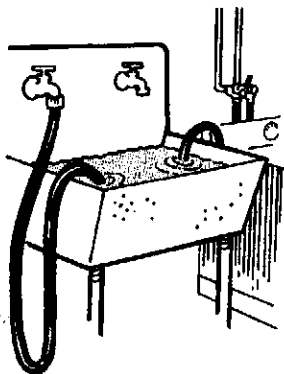
## What is backflow and how can it occur?

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.

