



Massachusetts Department of Environmental Protection
Division of Water Supply
One Winter Street
Boston, Massachusetts 02108-4746

Who is responsible for protecting the public drinking water supply from cross connections?

In your neighborhood:

Your local public water supplier is required to survey all industrial, commercial and institutional facilities to make sure that all potential cross connections are identified and eliminated or protected by a backflow preventer. The water supplier is also responsible for inspecting and testing each backflow preventer to make sure that it is providing maximum protection.

At your work place:

It is the facility owner's responsibility to make sure that every cross connection situation on the property is eliminated or properly protected by a backflow preventer and each backflow preventer has been properly installed and permitted by DEP/DWS. It is also the property owner's responsibility to ensure that each backflow preventer is in working order and that the permit is renewed annually.

What can I do to make sure my water supply is protected from cross connections?

At home:

- Contact your local water supplier to find out what he/she is doing to prevent cross connection contamination incidents.
- Survey your home to make sure you are not unknowingly creating a cross connection.
- Have all changes to your plumbing system performed by a licensed plumber.
- Do not attach any pesticide, chemical, or any other nonpotable liquid applicators to your water line.
- Install hose bibb vacuum breakers on all

outside faucets. The hose bibb vacuum breaker isolates garden hose applications, protecting your drinking water supply from contaminants that could be drawn into your home through the hose.

At work:

- Contact your supervisor and/or maintenance personnel and find out if all cross connections within your workplace are protected.
- Find out when/if all backflow preventers have been tested.
- Ask your facility to provide you with information on its cross connection program.

In general:

- Find out all you can about cross connection control from DEP, your local water department, or a plumbing inspector.

Where can I get more information on cross connections?

For more information on cross connections, contact your local water supplier or health official. You may also contact DEP - Division of Water Supply at One Winter Street, Boston, MA 02108 or call (617) 292-5770.

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Cross Connections

What every consumer
should know about...

Protecting Drinking Water



The Commonwealth of
Massachusetts

Executive Office of
Environmental Affairs

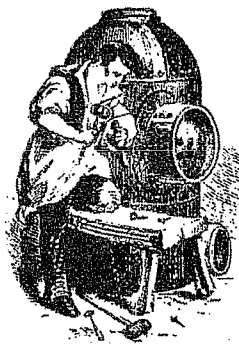
Department of
Environmental Protection

What is a cross connection?

A cross connection occurs whenever a potable drinking water line is directly or indirectly linked to a piece of equipment or piping containing nonpotable water.

Why should I be concerned about cross connections?

An unprotected or inadequately protected cross connection in your home or work place could contaminate the drinking water not only in your building, but in neighboring businesses and homes.



Severe illnesses and injuries - even deaths - have been caused by cross connection contamination events that could have been prevented. Unprotected and inadequately protected cross connections have been known to cause outbreaks of hepatitis A, gastroenteritis, Legionnaire's disease, chemical poisoning, body lesions (from exposure through showering), damage to plumbing fixtures, and explosions.

How can a cross connection contamination event occur?

Nonpotable water or chemicals used in equipment or a plumbing system can end up in the drinking water line as a result of backpressure or backsiphonage. 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. Backsiphonage occurs when the

pressure in the drinking water line drops due to fairly routine occurrences such as main breaks, nearby fires and unusually heavy water demand. Contaminants are then sucked out from the equipment or system and into the drinking water line.

Have cross connections been a problem in Massachusetts?

Yes, there have been several incidents in which public drinking water contamination occurred due to cross connections. One of the most severe incidents took place at a Massachusetts college. The entire football team became infected with hepatitis A due to cross connection contamination at a drinking water fountain that was hooked up to an unprotected water line. For more details on this, or a list of other incidents, please contact the Division of Water Supply at the address listed on the reverse side.

What types of potential cross connections can I encounter at home?

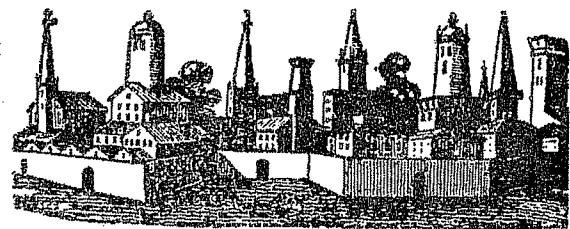
The outside watering tap and garden hose tend to be the most common sources of cross connections at home. The garden hose creates a hazard when submerged in nonpotable water such as a swimming pool or when attached to a chemical sprayer for weed-killing. Garden hoses are also often left laying on the ground and may be contaminated by fertilizer, cesspools or garden chemicals. Other potential household cross connections can occur when a private well is brought on line or when lawn irrigation systems, boilers, dishwashers, and other appliances are connected to plumbing. Home businesses such as photo labs and beauty salons can also be a source of cross connections.

What types of cross connections can I encounter at work?

Areas where cross connections can occur at work include: air conditioning or cooling systems, fire protection systems, lawn irrigation systems and high pressure boilers. In a factory, cross connections may occur within process equipment such as chemical mixing tanks, plating tanks, private wells used for process water and heat exchangers. Other types of businesses that must be protected from cross connections include hospitals, laboratories, mortuaries, piers, docks, marinas, chemical plants and metal plating industries.

How is the public drinking water protected from cross connections?

The best way to protect drinking water is to eliminate every cross connection. When this is not possible, drinking water lines are protected from cross connections by the installation of backflow preventers. There are several types of backflow preventers required and regulated by the Massachusetts Department of Environmental Protection - Division of Water Supply (DEP/DWS). Backflow preventers come in various sizes and types. The device required depends on the health risk associated with the cross connection condition and must be permitted by DEP.



For more information, fill out the following and mail to: **DEP Division of Water Supply, One Winter Street, Boston, MA 02108.**

Check which information you would like to receive:

- ☐ Cross connection regulations (310 CMR 22.22) ☐ Cross connection guide for restaurant owners
☐ Cross connection information regarding fire sprinkler systems

Name	
Company	
Address	
City/Town	
Zip Code	

AN INTRODUCTION TO CROSS CONNECTION CONTROL

Everyday, the City of _____ proudly supplies an average of 60 million gallons of water to its citizens. Water that exceeds the requirements of the EPA. Before the water is pumped to your home or business, it has gone through careful treatment and numerous tests to ensure its quality.

Did you know that your tap water (drinking water) has to meet standards that exceed those for bottled water? Unlike tap water, the quality of finished bottled water is not government-monitored. You don't need to buy bottled water for safety reasons in the City of _____ because our tap water exceeds federal and state drinking water standards.

Congress established the Safe Drinking Water Act (SDWA) in 1974 to protect human health from contaminants in drinking water and to prevent contamination of existing groundwater supplies. This act and its amendments (1986 and 1996) require many actions to protect drinking water and its sources. One of these actions is the **installation and maintenance of an approved backflow prevention assembly at the water service connection whenever a potential hazard is determined to exist in the customer's system.** Without

(Continued on page 2)



Your Local Water Department

Your Address
City, State Zip Code

Phone: ____/____-____

Fax: ____/____-____



ABPA
Headquarter Services

P.O. Box 3051
Bryan, TX 77805-3051

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For more information about the
American Backflow Prevention Association go to
www.abpa.org or call 979.846.7606.



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proper protection devices, cross connections can occur.

What is a **cross connection**? A connection between your drinking water and another source of water that combines the two when a backflow condition occurs. When this occurs, your drinking water can become contaminated.

OK. So? What is **backflow**? Backflow is when the water in your pipes (the pipes after the water meter) goes backward (the opposite direction from its normal flow). There are two situations that can cause the water to go backward (backflow):

- **Backpressure** – the pressure in your pipes is greater than the pressure coming in.
- **Backsiphonage** – a negative pressure in one of the pipes.

To protect the water system, two kinds of **backflow prevention assemblies** (devices that prevent the backflow of water) are required for all business customers that present a potential hazard to the City's water system:

- **External** – to protect the City's water from cross connection with the water on the customer's premises

- **Internal** – to protect the customer from potentially hazardous cross connections in his own system.

What is considered a potential hazard?

ANY possibility of pollutants, contaminants, and system or plumbing hazards. For example: fire protection systems, irrigation systems, gasoline refineries and stations, restaurants, hospitals, and manufacturers. Just to name a few.

To keep your drinking water safe, we diligently check the plans of each new business for compliance with cross connection/backflow requirements. We test and repair all external backflow prevention assemblies annually. The City of _____ sends notices and test forms for completion requiring the annual testing and repair of all internal backflow prevention assemblies.

We take pride in the water we provide and will continue to protect it and our citizens.

Now that you have some background, you may ask...What's the big deal? Well, the big deal is that backflows due to cross connections can cause sickness and death. Even in your own home, you can unwittingly create a cross connection:

- Putting the garden hose in a swimming pool to fill it
- Putting the garden hose in a pet's water bucket to fill it, or the fish tank

- Putting the garden hose down the drain to flush out debris when it's backed up
- Connecting your garden hose to a plant fertilizer or bug spray unit

Over half of the nation's cross connections involve unprotected garden hoses.

In Kansas, a man died from drinking out of his garden hose. He had been spraying the yard with poison to get rid of bugs and had connected his garden hose to the spraying device. Unknown to him, during the spraying, a drop in pressure occurred in the main water system causing the poisoned water to backflow into the hose. Enough to kill him when he took a drink from the garden hose after spraying. He had contaminated his own water system.

We, your Water Department, protect the water entering your system. However, it is your responsibility to protect the water on your property or in your home. If you need information on what you can do to protect it or have any questions, please call ____/____-____. We will be glad to assist you.

Your Local Water Department

Your Address
City, State Zip Code

Phone: ____/____-____

Fax: ____/____-____