



Chesterfield County, Virginia Utilities Department

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CROSS-CONNECTION CONTROL AND BACKFLOW PREVENTION PROGRAM



Have you ever connected a garden sprayer to the end of a hose in order to fertilize your vegetables or flowers? Many of us do. Have you ever stuck the end of a garden hose into your car's radiator or connected it to the heater hoses in order to flush the radiator? Or, have you ever placed the hose under the water's surface in a swimming pool and left it on?

Doing any of the above poses a risk of contaminating your home's drinking water with chemicals that can cause serious health concerns if swallowed.

The following question-and-answer section is designed to explain such risks, which are created by cross-connections in your home's drinking-water system, and how those dangers are prevented.

Questions and Answers

What is a cross-connection? Any existing or possible interconnection between a drinking water system and any other system that contains a substance of unknown or uncertain quality is a cross connection. A cross connection also is described as the link that can bring two systems together.

The most common cross connection is an outside hose faucet, typically called a "hose bib" or "sillcock." These plumbing fixtures are used for connecting hoses that we use for various purposes such as watering our gardens, flowers and lawns.



What is cross-connection control and why is it important? The methods, practices and procedures used to prevent contamination or pollution of drinking water from backflow through cross connections is called cross-connection control. It ensures that your drinking water remains safe from bacteria, chemicals and other substances that may enter the water from unknown or improperly maintained sources because of abnormal pressure changes.

What is a cross-connection control program? It's a written plan developed to detect, monitor and manage cross connections and implement the procedures and practices necessary to ensure safe drinking water and comply with the rules and regulations of federal, state and local governments.

What is backflow and how is it prevented? The reverse flow of water or other substances in pipes, typically caused by unusual and irregular changes in pressure, is called backflow. Preventing backflow is a matter of avoiding the reverse flow of an unwanted substance into the

drinking water by using special plumbing methods, devices and practices. Preventing backflow is accomplished through a physical means or mechanical device designed and built specifically to prevent backflow.

What is back-siphonage? The backward flow of water or other substances from one system to another because of a decrease in pressure is called back-siphonage. The water or substance is drawn or siphoned backward to the point of lowest pressure, such as at a suddenly opened valve or hydrant, or at a break in a pipe or a water main.

What is backpressure? The backward flow of water or other substances from one system to another because of an increase in pressure is called backpressure. The water or substance is pushed backward suddenly or over time by a pump, an increase in temperature or because of changes in height (pressure increases as water rises).

What is an “approved” backflow prevention method, assembly or device? A physical means or mechanical device that has been tested and approved by a nationally recognized laboratory, organization or institute, such as Factory Mutual, Underwriters Laboratory, the Foundation for Cross Connection Control and Hydraulic Research, or the American Society of Sanitary Engineering.

What is contamination? It is the introduction or presence of any foreign substance in a drinking-water system that could or does make the water hazardous to human health.

What is pollution? It is the introduction or presence of any foreign substance in a drinking-water system that could or does change the taste, odor or color of the water and weakens its usefulness, but is not hazardous to human health.

What is potable water? Water that is fit for drinking, cooking and household uses is called potable water.



What are examples of cross connections around my home or business? The most common cross connection is an outside hose faucet, typically called a “hose bib” or “sillcock.” These plumbing fixtures are used for connecting hoses that we use for various purposes such as watering our gardens, flowers and lawns.



Where in my home or business are backflow prevention methods, assemblies or devices typically found or required? If you have a toilet with a tank on the back in your home or business, it contains a valve to fill the tank every time you flush. The fill valve, or “ballcock,” is equipped with an approved backflow prevention device that prevents any water in the tank from being siphoned back into the pipes of your house (anti-siphon). Plumbing codes require all water outlets to be equipped with a backflow prevention method or device to prevent contamination or pollution of the drinking water. Therefore, all sinks have a space between the end of the faucet and the flood level of the sink, called an air gap. Some sinks typically found in commercial businesses, such as a mop sink, are equipped with a backflow prevention device called an atmospheric vacuum breaker installed on the faucet.

All hose bibs (hose connections), sometimes called sillcocks, are required by code to have a special backflow prevention device installed called a hose connection vacuum breaker. This device prevents water in the hose from flowing backward into the pipes of your house.



In restaurants, beverage dispensing equipment is required to have specialized backflow prevention devices installed to prevent carbon dioxide gas and carbonated water from mixing with copper piping.

In other types of commercial and industrial businesses, it is necessary to ensure the safety of Chesterfield County's drinking water by requiring the installation of backflow prevention assemblies in the main water-service line to certain types of buildings, such as hospitals, medical and dental clinics, veterinary facilities, funeral homes, industrial manufacturers, chemical and petroleum processing and storage facilities, car washes, laundries, etc. The types of backflow prevention devices installed at these locations can range in size from $\frac{3}{4}$ to 10 inches in diameter and cost anywhere from a couple hundred dollars to tens of thousands of dollars to install and maintain. Illustrations of a few other types of backflow prevention assemblies are shown below.



Reduced Pressure Principal



Double Check Valve



Pressure Vacuum Breaker

Does my underground lawn sprinkler system require a backflow preventer? Yes. All underground lawn and garden irrigation systems are required to have backflow prevention assemblies installed and routinely maintained. State law requires such assemblies to be tested at the time they are installed and yearly thereafter, as well as any time they are repaired or replaced.

- [Download a guide to installation for residential irrigation backflow preventers.](#)
- [Download a guide to installation for commercial backflow preventers.](#)

What test is required and how is it conducted? A performance test is done to check if the assembly continues to operate as designed and continues to protect against backflow. A specialized test instrument equipped with a large pressure gauge is connected to the backflow prevention assembly with three separate high-pressure hoses that are attached in various techniques to measure the differences in pressure under certain conditions.

Who performs the test? The test must be performed by someone who holds a current certification as a "backflow prevention device worker" issued by the Virginia Department of Professional and Occupational Regulation. The certification ensures you that the tester is

specially trained, experienced, and has successfully completed an examination that tests his or her competency in the subject of cross connection control and backflow prevention.

Is there anything else required with the test? Yes. At the time the test is conducted by the certified tester, he or she will complete a Backflow Prevention Assembly Test Report form, provide you with a copy, and either you or he must send Chesterfield County a copy of the form for the county's records.

Where do I get the Backflow Prevention Assembly Test Report form, and how and where do I send it? Download and fill in the [BFP Test Report Form](#). The form may be mailed to: Chesterfield County Department of Utilities, Cross Connection Control Coordinator, P.O. Box 608, Chesterfield, VA 23832-0009, or faxed to (804) 751-4437.

Where do I find a certified backflow prevention device worker? Check advertisements in the yellow pages of your local telephone book listed under "Plumbing Contractors." You can also search the internet.

How much does the test cost, and who is responsible for payment? There is no control over the cost of the test. Testers and businesses set their own prices, which are typically controlled by the current market. The owner (property owner, building owner, tenant or homeowner) is responsible for maintenance of the backflow prevention assembly at his or her own expense.

Where can I find more information about cross-connection control and backflow prevention? More detailed information, including the types of problems that can and have been caused by cross connections and backflow, the principles of water pressure and backflow, and additional examples of assemblies and devices, can be found by clicking on the following links:

- <http://www.epa.gov/safewater/crossconnection.html>

Chesterfield County is committed to providing you with superior drinking water. The Cross Connection Control and Backflow Prevention Program is essential to ensure quality drinking water. With your help, we can make the program efficient and successful.



- [View a video about backflow prevention for **residential** customers](#)
- [View a video about backflow prevention for **commercial** customers](#)

If you have any questions, call the Cross-Connection Information Line at (804) 748-1280, visit www.chesterfield.gov/utilities, or contact the cross-connection control coordinator at (804) 748-1356.

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