

## CROSS CONNECTION CONTROL PROGRAM

One of our most precious natural resources is our drinking water. We can survive for up to a month without food but only around a week without water<sup>1</sup>. Our water departments across the nation have, for many years, consistently provided high quality drinking water. Because of this we often take safe drinking water for granted. Unfortunately, at the point of use the high quality water that was sent from the water department may have been compromised by a cross connection with a non-drinking water source. This cross connection can cause sickness or worse.

In 1974 our federal government enacted the Safe Drinking Water Act (SDWA). This law established drinking water standards through the Environmental Protection Agency (EPA), which mandates that individual states are responsible for the enforcement of these standards as well as the supervision of the public water supply and the sources of drinking water.<sup>2</sup> The EPA has specific requirements regarding cross connections and backflow prevention within the SDWA.

In response to the SDWA individual states have developed their own Cross Connection Control “CCC” programs that are required to be equal to or more stringent than the SDWA. The State of Florida requires water systems to develop a comprehensive CCC program per FAC 62-550.

The need for an active CCC program goes beyond keeping people safe – as guardians of the drinking water system the water utility is responsible for the health and safety of all consumers with respect to the elimination and prevention of all cross connections.<sup>3</sup> Further, the utility is mandated by this same law to implement a CCC plan and program that provides administration, site inspections, re-inspections as needed, public education, data management, reporting, and annual testing of testable backflow prevention assemblies.

### “Keeping People Safe”

Until the SDWA, data was not maintained regarding water quality. However, during the past thirty years there have been several documented backflow incidents reported by the EPA, FDEP, TREEO, and other government agencies regarding contaminants such as paraquat, propane gas, chlordane, heptachlor, pesticides, washer water, bilge water, boiler water, irrigation & reclaim water, hexavalent chromium, ethylene glycol, creosote, untreated surface water and many other contaminants that have entered our drinking water system. In all of these examples unsuspecting people have become ill or in some cases have died.

### What is a Cross-Connection?

Every time any connection (piping, equipment, hoses, etc.) is made to the drinking water system, a cross-connection occurs. The connection can be permanent, (example- lawn sprinkler system or chemical process system), or temporary (garden hose attached to a faucet). When cross-connections are not properly protected with a special, mechanical device, used water can be pulled or pushed back into the drinking water supply. That water can be dirty, or can contain bacteria or chemicals that are harmful to human health. Other common cross-connections include dishwashers, toilets, pressure washers, boilers, swimming pools, streams, wells, lakes, solar heaters, fountains, and many others.

### How Does Contamination Occur?

Water normally flows in one direction, from the Utility’s water system through the customer’s cold or hot water plumbing system to a faucet or other plumbing fixture. Under certain conditions, water can flow in the reverse direction. This is known as **backflow**, and it occurs when backsiphonage or backpressure is created in a water line.

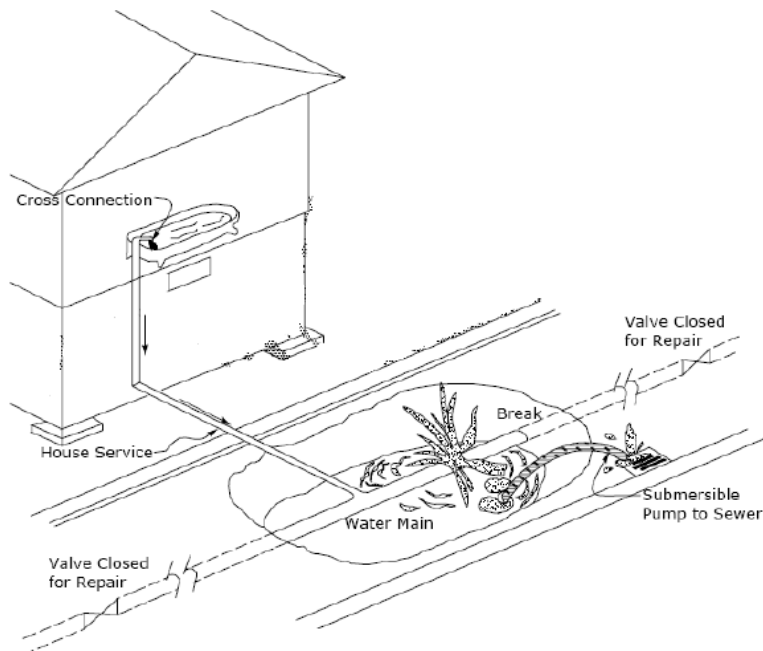
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<sup>1</sup> Answers.com

<sup>2</sup> “Cross Connection Control Rules Manual”, US EPA – Office of Water, EPA 570/9-89-007, June 1989.

<sup>3</sup> FDEP FAC 62-550

## Backsiphonage



Backsiphonage can occur when there is a drop in the supply pressure of the water distribution system. Contaminated water in piping or vessels connected to the water distribution system can flow backwards because atmospheric pressure is, will be greater than the water system pressure. This condition is caused when distribution pressure is lowered due to a water line break, fire flow, or during a rapid withdrawal of a large amount of water from the system. The vacuum created may pull or siphon contaminants or pollutants into the drinking water system. An example of this would be if a garden hose connected to the home was left submerged in a bucket of soapy water or a bath tub, when a water main break occurred. The soapy water could be drawn back into the home due to backsiphonage.

**Backpressure** can be created when a source of pressure, such as a pump or boiler, creates a pressure greater than that supplied from the water distribution system, pushing used water back into the drinking water system. An example of this is when a pump used for irrigation of your lawn is connected to your home system via a garden hose to prime the pump. If this hose is not immediately removed after the pump is primed the irrigation pump could overcome the Utility's water system pressure and contaminated surface water would be pumped into your home and into the distribution system. (Water used for irrigation purposes that comes from a canal or a well is often contaminated with bacteria.)

## More Common Than We Think!



## Program Overview

Water quality is required to be protected as drinking water travels through the distribution system to our consumers. Rules enacted by the Florida Department of Environmental Protection (FDEP) establish requirements for operation of the distribution system. A key component of these regulations is to maintain a cross-connection control program to prevent any substance from entering the drinking water distribution system.

## What Is a Cross-Connection Control (CCC) Program?

A CCC program is a cooperative effort between plumbing and health officials, local governmental officials, and property owners to make sure that all connections to drinking water piping are installed safely, and to install protection on any existing connections that do not meet safe standards. To accomplish these goals, officials establish written procedures and guidelines for controlling cross-connections and ensure their enforcement so that the public drinking water supply is protected both in the city main and within buildings.

A typical CCC program consists of the following components:

**Public Education Program**—The utility department will inform their water customers with newsletters, brochures, public awareness meetings, and access to informational videos. Visit the website of Hydro Designs, Inc. at [www.hydrodesignsinc.com](http://www.hydrodesignsinc.com) and browse the “Links” page for various educational topics for more information and resources.

- **Cross-Connection Survey**—All commercial and residential properties’ plumbing systems will be surveyed to determine if cross-connections exist. Residential surveys will be external to the home.
- **Installation of Protective Devices**—Backflow prevention assemblies will be required to be installed where known unprotected cross-connections are identified.
- **Annual Testing**—All testable backflow prevention assemblies must be tested at the time of installation and once a year, for commercial customers and biennially for residential customers, by certified inspectors, and written proof of testing must be submitted. The cost for this testing is typically the responsibility of the owner of the property. Note: The pending Rule modification by the FDEP allows for residential devices to be non-testable dual check valves.

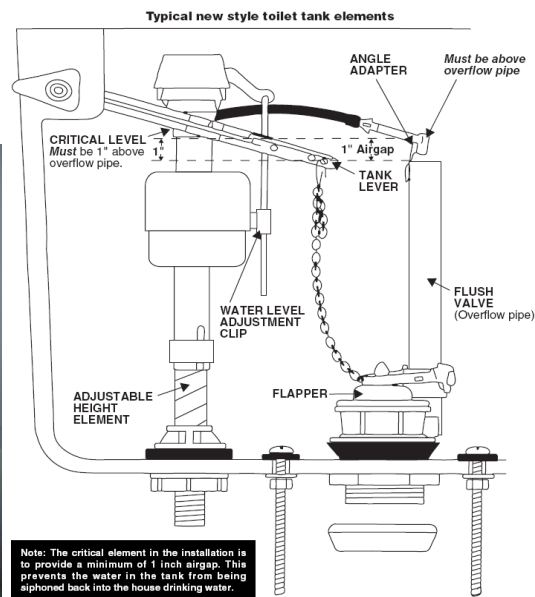


## What is a Cross-Connection Survey?

The cross-connection survey is the first step in our program. FDEP requires that a Cross Connection Control survey of the distribution system be conducted to determine the degree of hazard present at all properties connected to the distribution system. The survey will determine if any type of backflow prevention device will be required at a property.

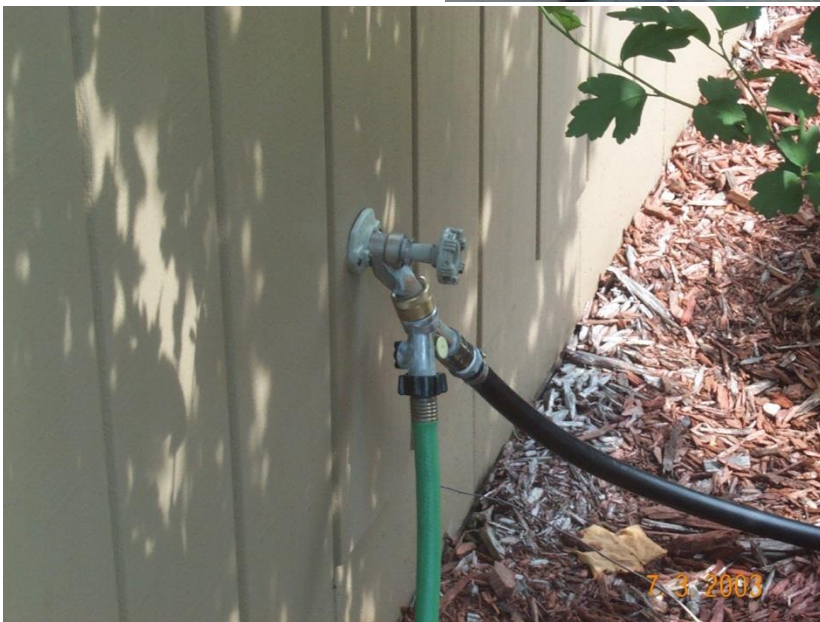
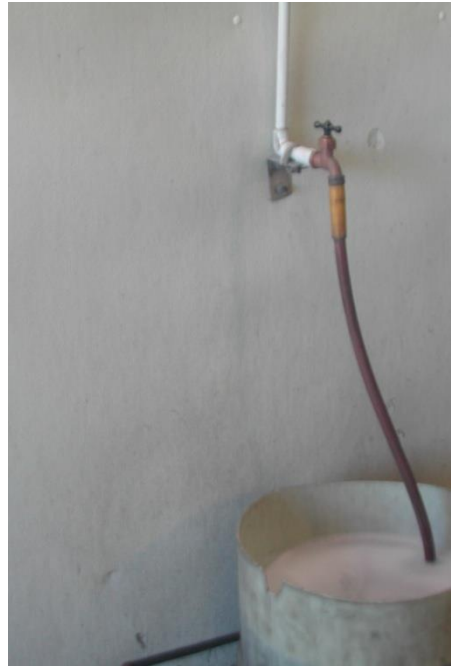


Inspector is recording an installed Pressure Vacuum Breaker. This device is testable and is typically installed on underground irrigations systems that are connected directly to the city water supply.



Older toilets are often equipped with fill valves that are submerged below the water level. Installing a new Anti-Siphon Ball Cock Assembly will fix the problem. These valves are inexpensive and are available at Home Depot, Lowes, or your local hardware store.

A Hose Bibb Vacuum Breaker (HBVB) should be installed on all outside hose spigots to prevent backflow. Unprotected hose connections are the number one cause of backflow incidents. An inexpensive HBVB will eliminate this threat.



Does this look familiar? Garden hoses can be hazardous. Be sure to install a backflow prevention device!

A Hose Bibb with an Integrated Vacuum Breaker is required on all new construction after 1994.



Chemical from lawn fertilizers (or insecticides) can back up through your garden hose if it is not protected.



Water Softeners can be a bacteria hazard if the drain line is not properly air gapped. Note the picture on the right. The copper drain pipe is elevated above black drain line. This is a proper air gap.



Working together to keep our drinking water safe!

