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GLADEVILLE UTILITY DISTRICT
3826 Vesta Road • Lebanon, TN 37090 • 615-449-0301

Cross Connection Program

Protecting our public drinking water supply through cross-connection control and backflow prevention.

What is a Cross Connection?

A cross connection is a temporary or permanent connection between a potable (drinking) water supply and a non-potable source. An example is piping that connects the public water system to an irrigation system.

What is Backflow?

Backflow is the undesirable flow of non-potable water or another substance through a cross connection back into a consumer's plumbing system or the public water system. The two types of backflow are backsiphonage and backpressure.

What is Backsiphonage?

Backsiphonage is backflow caused by negative pressure in the public water system or the consumer's potable water system. It can occur during a water main break, while repairs are being made, or when there is a stoppage in the water supply.

What is Backpressure?

Backpressure occurs when downstream pressure is greater than the supply pressure of the public water system or the consumer's potable water system. It may be caused by elevated plumbing, booster pumps, pressure vessels, or reductions in potable water supply pressure during periods of high demand, line flushing, firefighting, or water-main breaks.

Why Protect Against Backflow?

Backflow into the public water system can pollute or contaminate drinking water and make it unsafe or unusable. Because nearly all water systems have cross connections, identifying hazards and eliminating or protecting against them is an important part of maintaining a safe public water supply.

How Can Backflow Be Prevented?

Backflow can be prevented by installing a State-approved / Gladeville Utility District-approved backflow prevention device. The most basic method is an air gap. Mechanical backflow preventers include reduced-pressure principle assemblies (RPBP) and double-check valve assemblies. Contact the District for assistance in determining the appropriate device for your installation.

Where Are Cross Connections Found?

Cross connections may be found in most plumbing systems. Each connection should be identified and evaluated so the appropriate backflow protection can be provided. Common examples include:

- Wash basins and service sinks
- Irrigation sprinkler systems
- Laboratory equipment
- Processing tanks
- Water recirculation systems
- Fire sprinkler systems
- Hose bibs
- Auxiliary water supplies
- Photo developing equipment
- Boilers
- Solar heat systems
- Swimming pools

Why Must Backflow Preventers Be Tested at Least Once Annually?

Mechanical backflow preventers contain internal seals, springs, and other moving parts that are subject to fouling, wear, or fatigue. Mechanical preventers and air gaps can also be bypassed. Periodic testing helps ensure devices are functioning properly and in compliance with State regulations. Customers are responsible for testing their backflow devices. Testers must be State-certified and approved by the District's Cross Connection Coordinator for test results to be accepted

What is the Most Common Form of Cross Connection?

The ordinary garden hose is the most common offender because it can easily be connected to the potable water supply and used for many potentially dangerous applications.

What is Potentially Dangerous About an Unprotected Sill Cock?

A sill cock allows easy hose connection for outdoor watering. A garden hose can become hazardous when submerged in a swimming pool, elevated above the sill cock, connected to a chemical sprayer, or left on the ground where it may contact fertilizers, storm-water runoff, or garden chemicals.

What Protection is Required for Sill Cocks?

A hose bib vacuum breaker should be installed on every sill cock to isolate garden-hose applications and protect the potable water supply from possible contamination.

Should a Hose Bibb Vacuum Breaker Be Used on Frost-Free Hydrants?

Yes, provided the device allows the line to drain after the hydrant is shut off. A removable vacuum breaker may permit draining but can be left off after removal. If a non-removable device is used, it should include a means to drain the line and prevent winter freezing.

What is the Difference Between Pollution and Contamination?

Pollution does not necessarily constitute an immediate health hazard, although it may impair water quality in taste, odor, or utility. Contamination does constitute a health hazard and may expose the consumer to water-borne disease or illness.

Where Should a Double Check Valve Assembly Be Used?

Gladeville Utility District allows double-check valve assemblies only on metered fire lines classified as low-hazard level.

Typical Applications for Double Check Valve Assemblies

Double Check Valve Assemblies (DCVA) may be used where the degree of hazard is low, meaning the non-potable source is polluted rather than contaminated. Local inspection departments may determine the degree of hazard, but those determinations should be coordinated closely with the District before a hazard classification is assigned.

Where Should a Reduced Pressure Backflow Preventer (RPBP) Be Used?

Reduced Pressure Backflow Assemblies may be used on direct connections subject to backpressure or backsiphonage where contamination by material that may constitute a potential health hazard is possible.

Typical Applications for RPBP Devices

RPBP devices should be used whenever the non-potable source is more of a contaminant than a pollutant. They are commonly used as main-line protection for the municipal water supply and on branch-line applications where non-potable fluid may constitute a health hazard, such as boiler feed lines, commercial garbage-disposal systems, and industrial boilers.

What is the Benefit of a Strainer Preceding a Backflow Preventer?

A strainer helps protect backflow-preventer check valves from foreign matter and debris flowing through the line. This can reduce nuisance fouling, maintenance, and shutdowns. The pressure drop attributable to the strainer is generally negligible compared with the protection it provides.

How Can You Help Prevent Backflow?

- Do not submerge a hose in buckets, pools, spas, tubs, sinks, or other containers that may contain bacteria or harmful cleaners.
- Keep the end of the hose away from possible contaminants.
- Turn off the water at the source when the hose is not in use.
- Do not attach a spray or cleaning device to a hose unless appropriate backflow protection is installed.

How Backsiphonage or Backflow Can Occur in a Public Water System

When a water-main break occurs, water rushes toward the break and line pressure may drop enough to change the direction of flow. That condition can pull water from irrigation systems, swimming pools, watering troughs, hose pipes, and other undesirable sources back into the main line. When service is restored, contaminated water could then be used by the customer or carried farther through the system. This is one of the potentially hazardous conditions the Cross Connection Program is designed to prevent.

Questions?

For questions about the Cross Connection Program, contact **Justin Lee**, Cross Connection Coordinator, at 615-994-2200. For questions or concerns about potable-water quality, contact **Brian Long**, Chief Water Plant Operator, at 615-449-0301

Check for Leaks Regularly

We encourage customers to check for leaks periodically by observing the water meter, typically located near the road at the front of the property. If no water is being used in the home and the meter indicator is moving, there may be a leak in the customer's plumbing or service system between the meter and the house. It is also a good idea to record a meter reading periodically and compare usage with the amount shown on the water bill.

Even Small Leaks Can Add Up

At a water-system pressure of 60 PSI, even a small leak can result in significant water loss over 30 days:

Leak Size	Approx. Water Loss in 30 Days
1/4 inch	393,632 gallons
1/8 inch	98,667 gallons
1/16 inch	24,665 gallons
1/32 inch	5,165 gallon

Typical Household Water Use

Activity	Description	Typical Water Use
Shower	Regular shower head (5 minutes)	30 gallons
Toilet flushing	Conventional toilet	5-7 gallons per flush
Brushing teeth	With tap running	10 gallons
Tub bath	Full tub	20 gallons
Shaving	With tap running	20 gallons
Washing hands	With tap running	2 gallons or more
Dish washing	With tap running	30 gallons
Dishwasher	Full cycle	15 gallons
Washing machine	Top water level	40 gallons

Note: These figures are averages intended to demonstrate how everyday usage can accumulate over a 30-day period. Actual household usage will vary based on water-use habits and the number of people in the home.