

CHAPTER 4

CROSS CONNECTION CONTROL¹

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9-4-1: **PURPOSE:** The purpose of these rules and regulations is:

- A. To protect the public water supply system from contamination or pollution by isolating within the customer's water system contaminants or pollutants which could backflow through the service connection into the public water supply system.
- B. To promote the elimination or control of existing cross connections, actual or potential, between the public or consumer's potable water system and nonpotable water systems, plumbing fixtures and sources or systems containing substances of unknown or questionable safety
- C. To provide for the maintenance of a continuing program of cross connection control which will prevent the contamination or pollution of the public and consumer's potable water systems. (Ord. 90-1, eff. 2-1-1990)

9-4-2: **POLICY:** The owner of official custodian shall be responsible for protection of the public water supply system from contamination due to backflow or back siphonage of contaminants through the customer's water service connection. If, in the judgment of the Public Works Department or his authorized representative, an approved backflow prevention device is necessary for the safety of the public water supply system, the Public Works Department shall give the notice to the consumer to install such approved backflow prevention device at each service connection to the

¹ See also Section 9-3-5 of this Title

premises. The consumer shall immediately install such approved device or devices at his own expense; failure, refusal or inability on the part of the consumer to install such device or devices immediately shall constitute grounds for discontinuing water service to the premises until such device or devices have been installed. The consumer shall retain records of installation, maintenance, testing and repair as required in subsection 9-4-7A4 of this article for a period of at least five (5) years.
(Ord. 90-1, eff. 2-1-1990; amd. 2002 Code)

9-4-3: **APPLICATION OF PROVISIONS:** These rules and regulations shall apply to all premises served by the public potable water supply system of the Village. (Ord. 90-1, eff. 2-1-1990)

9-4-4: **DEFINITIONS:** The following definitions shall apply in the interpretation and enforcement of these regulations:

APPROVED: Backflow prevention devices or methods approved by the Research Foundation for Cross Connection Control of the University of Southern California, American Water Works Association, American National Standards Institute or certified by the National Sanitation Foundation.

AUXILIARY WATER SYSTEM:

Any water source on or available to the premises other than the public water supply system and includes the water supplied by the system. These auxiliary waters may include water from a source such as wells, lakes, or streams, or process fluids, or used water. These waters may be polluted or contaminated or objectionable or constitute a water source system over which the water purveyor does not have control.

BACKFLOW:

The flow of water or other liquids, mixtures, or substances into the distribution pipes of a potable water system from any source other than the intended source of the potable water supply.

BACKFLOW

PREVENTION DEVICE: Any device, method, or type of construction intended to prevent backflow into a potable water system. All devices used for backflow prevention in Illinois must meet the standards of the Illinois Plumbing Code and the Illinois Environmental Protection Agency.

CONSUMER OR CUSTOMER	The owner, official custodian or person in control of any premises supplied by or in any manner connected to a public water system.
CONSUMER'S WATER SYSTEM:	Any water system located on the customer's premises. A building plumbing system is considered to be a customer's water system.
CONTAMINATION:	An impairment of the quality of the water by entrance of any substance to a degree which could create a health hazard.
CROSS CONNECTION:	Any physical connection or arrangement between two (2) otherwise separate piping systems, one of which contains potable water and the other a substance of unknown or questionable safety or quality, whereby there may be a flow from one system into the other.
DIRECT CONNECTION:	A cross connection formed when a water system is physically joined to a source of unknown or unsafe substance.
INDIRECT CROSS CONNECTION:	A cross connection through which an unknown substance can be forced, drawn by vacuum or otherwise introduced into a safe potable water system.
DOUBLE CHECK VALVE:	An assembly composed of single, independently acting check valves approved under ASSE standard 1015. A "double check valve assembly" must include tight shutoff valves located at each end of the assembly and suitable connections for testing the water tightness of each check valve.
FIXED PROPER AIR GAP:	The unobstructed vertical distance through the free atmosphere between the water discharge point and the flood level rim of the receptacle.

- HEALTH HAZARD:** Any condition, device or practice in a water system or its operation resulting from a real or potential danger to the health and well-being of consumers. The word "severe" as used to qualify "health hazard" means a hazard to the health of the user that could be expected to result in death or significant reduction in the quality of life.
- INSPECTION:** A plumbing inspection to examine carefully and critically all materials, fixtures, piping and appurtenances, appliances and installations of a plumbing system for compliance with requirements of the Illinois Plumbing Code, 77 Illinois Administrative Code 890.
- NONPOTABLE WATER:** Water not safe for drinking, personal, or culinary use as determined by the requirements of 35 Illinois Administrative Code 604.
- PLUMBING:** The actual installation, repair, maintenance, alteration or extension of a plumbing system by any person. "Plumbing" includes all piping, fixtures, appurtenances and appliances for a supply of water for all purposes, including, without limitation, lawn sprinkler systems, from the source of a private water supply on the premises or from the main in the street, alley or at the curb to, within and about any building or buildings where a person or persons live, work or assemble. "Plumbing" includes all piping, from discharge of pumping units to and including pressure tanks in water supply systems. "Plumbing" includes all piping, fixtures, appurtenances, and appliances for a building drain and a sanitary drainage and related ventilation system of any building or buildings where a person or persons live, work or assemble from the point of connection of such building drain to the building sewer or private sewage disposal system five feet (5') beyond the foundation walls.
- POLLUTION:** The presence of any foreign substance (organic, inorganic, radiological, or biological) in water that tends to degrade its quality so as to constitute a hazard or impair the usefulness of the water.

- POTABLE WATER:** Water which meets the requirements of 35 Illinois Administrative Code 604 for drinking, culinary, and domestic purpose.
- POTENTIAL CROSS CONNECTION:** A fixture or appurtenance with threaded hose connection, tapered spout, or other connection which would facilitate extension of the water supply line beyond its legal termination point.
- PROCESS FLUID(S):** Any fluid or solution which may be chemically, biologically or otherwise contaminated or polluted in a form or concentration such as would constitute a health, pollutional, or system hazard if introduced into the public or a consumer's potable water system. This includes, but not limited to:
- A. Polluted or contaminated waters;
 - B. Process waters;
 - C. Used waters originating from the public water supply system which may have deteriorated in sanitary quality;
 - D. Cooling waters;
 - E. Questionable or contaminated natural waters taken from wells, lakes, streams, or irrigation systems;
 - F. Chemicals in solution or suspension; and
 - G. Oils, gases, acids, alkalis and other liquid and gaseous fluids used in industrial or other processes, or for firefighting purposes.

**PUBLIC WATER
SUPPLY:**

All mains, pipes and structures through which water is obtained and distributed to the public, including wells and well structures, intakes and cribs, pumping stations, treatment plants, reservoirs, storage tanks and appurtenances, collectively or severally, actually used or intended for use for the purpose of furnishing water for drinking or general domestic use and which serve at least fifteen (15) service connections or which regularly serve at least twenty five (25) persons at least sixty (60) days per year. A "public water supply" is either a "community water supply" or a "noncommunity water supply".

**REDUCED PRESSURE
PRINCIPLE BACKFLOW
PREVENTION
DEVICE:**

A device containing a minimum of two (2) independently acting check valves together with an automatically operated pressure differential relief valve located between the two (2) check valves and approved under ASSE standard 1013. During normal flow and at the cessation of normal flow, the pressure between these two (2) checks shall be less than the supply pressure. In case of leakage of either check valve, the differential relief valve, by discharging to the atmosphere, shall operate to maintain the pressure between the check valves at less than the supply pressure. The unit must include tightly closing shutoff valves located at each end of the device, and each device shall be fitted with properly located test cocks.

**SERVICE
CONNECTION:**

The opening, including all fitting and Appurtenances, at the water main through which water is supplied to the user.

SURVEY: The collection of information pertaining to a customer's piping system regarding the location of all connections to the public water supply system and must include the location, type and most recent inspection and testing date of all cross connection control devices and methods located within the customer's piping system. The survey must be in written form, and should not be an actual plumbing inspection.

SYSTEM HAZARD: A condition through which an aesthetically objectionable or degrading material not dangerous to health may enter the public water supply system or a consumer's potable water system.

USED WATER: Any water supplied by a public water supply system to a consumer's water system after it has passed through the service connection and is no longer under the control of the water supply official custodian.

WATER PURVEYOR: The owner or official custodian of a public water system. (Ord. 90-1, eff. 2-1-1990)

9-4-5: **WATER SYSTEM:** The water system shall be considered as made up of two (2) parts: the public water supply system and the consumer's water system.

A. Public Water System:

1. The public water supply system shall consist of the source facilities and the distribution system, and shall include all those facilities of the potable water system under the control of the Public Works Department up to the point where the consumer's water system begins. (Ord. 90-1, eff. 2-1-1990; amd. 2002 Code)
2. The source shall include all components of the facilities utilized in the production, treatment, storage, and delivery of water to the public water supply distribution system.
3. The public water supply distribution system shall include the network of conduits used to deliver water from the source to the consumer's water system.

- B. Consumer's Water System: The consumer's water system shall include all parts of the facilities beyond the service connection used to convey water from the public water supply distribution system to points of use. (Ord. 90-1, eff. 2-1-1990)

9-4-6: **CROSS CONNECTION PROHIBITED:**

- A. Connections between potable water systems and other systems or equipment containing water or other substances of unknown or questionable quality are prohibited except when and where approved cross connection control devices or methods are installed, tested and maintained to ensure proper operation on a continuing basis.
- B. No physical connection shall be permitted between the potable portion of a supply and any other water supply not of equal or better bacteriological and chemical quality as determined by inspection and analysis by the agency.
- C. There shall be no arrangement or connection by which an unsafe substance may enter a supply. (Ord. 90-1, eff. 2-1-1990)

9-4-7: **BACKFLOW PREVENTION:**

- A. Responsibility for Backflow Prevention: It is the responsibility of the water consumer to prevent backflow into the public water system by ensuring that:
1. Cross Connection Removal; Devices Installed: All cross connections are removed, or approved cross connection control devices are installed for control of backflow and backsiphonage.
 2. Installation of Devices: Cross connection control devices shall be installed in accordance with the manufacturer's instructions.
 3. Inspections: Cross connection control devices shall be inspected at least annually by a person approved by the agency as a cross connection control device inspector (CCCDI). The inspection of mechanical devices shall include physical testing in accordance with the manufacturer's instructions.
 4. Testing and Records:
 - a. Each device shall be tested at least annually or more frequently if recommended by the manufacturer. (Ord. 90-1, eff. 2-1-1990)

- b. Records submitted regarding the community public water supply shall be available for inspection by agency personnel in accordance with 415 Illinois Compiled Statutes 5/4(e). (Ord. 90-1, eff. 2-1-1990; amd. 2002 Code)
- c. Each device shall have a tag attached listing the date of most recent test, and name of CCCDI, and type and date of repairs.
- d. A maintenance log shall be maintained and include:
 - 1. Date of each test;
 - 2. Name and approval number of person performing the test;
 - 3. Test results;
 - 4. Repairs or serving required;
 - 5. Repairs and date completed; and
 - 6. Serving performed and date completed. (Ord. 90-1, eff. 2-1-1990)

B. Required Backflow Prevention Devices:

- 1. An approved backflow prevention device shall be installed on each service line to a consumer's water system serving premises where, in the judgment of the Public Works Department actual or potential hazards to the public water supply system exist.
- 2. An approved backflow prevention device shall be installed on each service line to a consumer's water system serving premises where the following conditions exist:
 - a. Premises having an auxiliary water supply, unless such auxiliary supply is accepted as an additional source by The Public Works Department and the source are approved by the Illinois Environmental Protection Agency.

- b. Premises on which any substance is handled which can create an actual or potential hazard to the public water supply system. This shall include premises having sources or systems containing process fluids or waters originating from the public water supply system which are no longer under the sanitary control of the Public Works Department.
 - c. Premises having internal cross connections that, in the judgment of the Public Works Department are not correctable, or intricate plumbing arrangements which make it impractical to determine whether or not cross connections exist.
 - d. Premises where, because of security requirements or other prohibitions or restrictions, it is impossible or impractical to make a complete cross connection survey.
 - e. Premises having a repeated history of cross connections being established or reestablished.
3. An approved backflow prevention device shall be installed on each service line to a consumer's water system serving, but not necessarily limited to, the following types of facilities unless the Public Works Department determines that no actual or potential hazard to the public water supply system exists: (Ord. 90-1, eff. 2-1-1990; amd. 2002 Code)
- a. Hospitals, mortuaries, clinics, nursing homes;
 - b. Laboratories;
 - c. Piers, docks, waterfront facilities;
 - d. Sewage treatment plants, sewage pumping stations or storm water pumping stations;
 - e. Food or beverage processing plants;
 - f. Chemical plants;
 - g. Metal plating industries;
 - h. Petroleum processing or storage plants;

- i. Radioactive material processing plants or nuclear reactors; and
- j. Car washes.

C. Types of Protection Required:

1. The type of protection required under subsections B2a, B2b and B2c of this section shall depend on the degree of hazard which exists as follows:
 - a. An approved fixed proper air gap separation shall be installed where the public water supply system may be contaminated with substances that could cause a severe health hazard.
 - b. An approved fixed proper air gap separation or an approved reduced pressure principle backflow prevention device shall be installed where the public water supply system may be contaminated with a substance that could cause a system or health hazard.
 - c. An approved fixed proper air gap separation or an approved reduced pressure principle backflow prevention device shall be installed where the public water supply system may be polluted with substances that could cause a pollution hazard not dangerous to health.
2. The type of protection required under subsection B2c of this section shall be an approved fixed proper air gap separation or an approved reduced pressure principle backflow prevention device.
3. Where a public water supply or an auxiliary water supply is used for a fire protection system, reduced pressure principle backflow preventers shall be installed on fire sprinkler systems connected to the public water supply when:
 - a. The sprinkler system contains antifreeze;
 - b. Water is pumped into the system from another source; or
 - c. There is a connection whereby another source can be connected to the sprinkler system.

D. Approved Backflow Prevention Devices:

1. All backflow prevention devices or methods required by these rules and regulations shall be approved by the Research Foundation for Cross Connection Control of the University of Southern California, American Water Works Association, American Society of Sanitary Engineering, or American National Standards Institute or certified by the National Sanitation Foundation to be in compliance with applicable industry specifications.
2. Installation of approved devices shall be made in accordance with 35 Illinois Administrative Code 653.802, and only as specified by the Research Foundation for Cross Connection Control of the University of Southern California or applicable industry specifications. Maintenance as recommended by the manufacturer of the device shall be performed. Manufacturer's maintenance manual shall be available on site.
(Ord. 90-1, eff. 2-1-1990)

9-4-8: **BOOSTER PUMPS:**

- A. Where a booster pump has been installed on the service line to or within any premises, such pump shall be equipped with a low pressure cutoff device designed to shut off the booster pump when the pressure in the service line on the suction side of the pump drops to twenty (20) psi or less.
- B. It shall be the duty of the water consumer to maintain the low pressure cutoff device in proper working order and to certify to the Public Works Department at least once a year that the device is operable. (Ord. 90-1, eff. 2-1-1990; annd. 2002 Code)

9-4-9: **INVESTIGATIONS AND SURVEYS:**

- A. The consumer's premises shall be open at all reasonable times to the approved Cross Connection Control Device Inspector for the inspection of the presence or absence of cross connections within the consumer's premises and for testing, repair and maintenance of cross connection control devices within the consumer's premises.

- B. On request by The Public Works Department or an authorized representative, the consumer shall furnish information regarding the piping system or systems or water use within the customer's premises. The consumer's premises shall be open at all reasonable times to the Public Works Department for the verification of information submitted by the consumer to the public water supply custodian regarding cross connection inspection results.
- C. It shall be the responsibility of the water consumer to arrange periodic surveys of water use practices on his premises to determine whether there are actual or potential cross connections to his water system through which contaminants or pollutants could backflow into his or the public potable water system. All cross connection control or other plumbing inspections must be conducted in accordance with Illinois Revised Statutes, 1983, chapter 11, paragraph 1103(1). (Ord. 90-1, eff. 2-1-1990; amd. 2002 Code)

9-4-10 **INSPECTIONS AND MAINTENANCE:**

- A. Schedule of Inspections, Tests and Maintenance: It shall be the duty of the consumer at any premises on which backflow prevention devices required by these regulations are installed to have inspections, tests, maintenance and repair made in accordance with the following schedule or more often where inspections indicate a need or are specified in manufacturer's instructions:
1. Fixed proper air gap separations shall be inspected at the time of installation and at least annually thereafter.
 2. Double check valve assemblies shall be inspected and tested for tightness at time of installation and at least annually thereafter, and required service performed within fifteen (15) days.
 3. Reduced pressure principle backflow prevention devices shall be tested at least annually or more frequently if recommended by the manufacturer, and required service performed within five (5) days.
- B. Performance of Tests: Testing shall be performed by a person who has been approved by the agency as competent to service the device. Proof of approval shall be in writing.
- C. Test or Inspection on Device: Each device shall have a tag attached listing the date of most recent test or visual inspection, name of tester, and type and date of repairs.

D. Maintenance Log: A maintenance log shall be maintained and include:

1. Date of each test or visual inspection;
2. Name and approval number of person performing the test or visual inspection;
3. Test results;
4. Repairs or serving required;
5. Repairs and date completed; and
6. Serving performed and date completed.

E. Defective Devices: Whenever backflow prevention devices required by these regulations are found to be defective, they shall be repaired or replaced at the expense of the consumer without delay. (Ord. 90-1, off. 2-1-1990)

9-4-11: **TAMPERING WITH DEVICES:** Backflow prevention devices shall not be bypassed, made inoperative, removed or otherwise made ineffective without specific authorization by the Public Works Department.
(Ord. 90-1, off. 2-1-1990; amd. 2002 Code)

9-4-12: **VIOLATIONS; DISCONTINUANCE OF WATER SERVICE:**

A. Service Discontinued: The Public Works Department shall deny or discontinue, after reasonable notice to the occupants thereof, the water service to any premises wherein any backflow prevention device required by these regulations is not installed, tested, maintained and repaired in a manner acceptable to the Public Works Department or if it is found that the backflow prevention device has been removed or bypassed, or if an unprotected cross connection exists on the premises, or if a low pressure cutoff required by these regulations is not installed and maintained in working order.

B. Restoration of Service: Water service to such premises shall not be restored until the consumer has corrected or eliminated such conditions or defects in conformance with these regulations and to the satisfaction of the Public Works Department and the required reconnection fee is paid.
(Ord. 90-1, eff. 2-1-1990; amd. 2002 Code)