

CHAPTER 7

CROSS CONNECTION CONTROL

7.01 PURPOSE. To provide an effective means for protecting the public water supply system from contamination due to backflow of contaminants through the customer water service connection into the public water system.

7.02 AUTHORITY. (a) Rule 890.1510 of the Illinois Plumbing Code, 77 IL Adm. Code 890-1510, requires protection of all potable water systems from contamination due to backflow of contaminants through plumbing connections, fixtures or appurtenances.

(b) IL Pollution Control Board Regulations, 35 IL Adm. Code, 601.101, et. seq., requires an active program of cross connection control which will prevent the contamination of all public water supply systems due to backflow of contaminants or pollutants through the potable water service connection.

(c) To accomplish these goals it is necessary to introduce restrictions that describe in detail specific procedures and requirements for cross connection control.

7.03 BACKFLOW PREVENTION DEVICE REQUIRED. All plumbing installed within the Village of Richmond shall be installed in accordance with the Illinois Plumbing Code, 77 IL Adm. Code 890. If in accordance with the IL Plumbing Code or in the judgment of the Superintendent of Public Works, an approved backflow prevention device is necessary for the safety of the public water supply system, the Superintendent of Public Works will give notice to the water customer to install such an approved device immediately. The water customer shall, at his own expense, install such an approved device at a location and in a manner in accordance with the IL Plumbing Code, Illinois Environmental Protection Agency and all applicable local regulations, and shall have inspections and tests made of such approved devices upon installation and as required by the IL Plumbing Code, Illinois Environmental Protection Agency and local regulations.

7.04 APPROVAL REQUIRED. No person, firm or corporation shall establish or permit to be established or maintain or permit to be maintained any connection whereby a private, auxiliary or emergency water supply other than the regular public water supply of the Village of Richmond may enter the supply or distribution system of said municipality, unless such private, auxiliary or emergency water supply system and the method of connection and use of such supply shall have been approved by the Superintendent of Public Works and the Illinois Environmental Protection Agency.

7.05 INSPECTION. (a) It shall be the duty of the Superintendent of Public Works to cause surveys and investigations to be made of industrial and other properties served by the public water supply to determine whether actual or potential hazards to the public water supply may exist. Such surveys and investigations shall be made a matter of public record and shall be repeated at least every two years, or as often as the Superintendent of Public Works shall deem necessary. Records of such surveys shall be maintained and available for review for a period of at least five years.

(b) The approved cross-connection control device inspector shall have the right to enter at any reasonable time any property served by a connection to the public water supply or distribution

system of the Village of Richmond for the purpose of verifying the presence or absence of cross connections. The Superintendent of Public Works or his authorized agent shall have the right to enter at any reasonable time any property served by a connection to the public water supply or distribution system of the Village of Richmond for the purpose of verifying information submitted by the customer regarding the required cross-connection control inspection. On demand the owner, lessee or occupants of any property so-served shall furnish to the Superintendent of Public Works any information which he may request regarding the piping system or systems or water use on such property. The refusal of such information, when demanded, shall, within the discretion of the Superintendent of Public Works, be deemed evidence of the presence of improper connections as provided in this ordinance.

7.06 AUTHORITY TO DISCONTINUE WATER SERVICE. The Superintendent of Public Works of the Village of Richmond is hereby authorized and directed to discontinue, after reasonable notice to the occupant thereof, the water service to any property wherein any connection in violation of the provisions of this ordinance is known to exist, and to take such other precautionary measures as he may deem necessary to eliminate any danger of contamination of the public water supply distribution mains. Water service to such property shall not be restored until such conditions have been eliminated or corrected in compliance with the provisions of this ordinance and until a reconnection fee of \$_____ is paid to the Village of Richmond. Immediate disconnection with verbal notice can be effected when the Superintendent of Public Works is assured that imminent danger of harmful contamination of the public water supply system exists.

Such action shall be followed by written notification of the cause of disconnection. Immediate disconnection without notice to any party can be effected to prevent actual or anticipated contamination or pollution of the public water supply, provided that, in the reasonable opinion of the Superintendent of Public Works or the Illinois Environmental Protection Agency, such action is required to prevent actual or potential contamination or pollution of the public water supply. Neither the Village of Richmond, the Superintendent of Public Works, or its agents or assigns shall be liable to any customer for any injury, damages or lost revenues which may result from termination of said customer's water supply in accordance with the terms of this ordinance, whether or not said termination was with or without notice.

7.07 CONSUMER RESPONSIBILITY. The consumer responsibility for back siphoned or back pressured material or contamination through backflow, if contamination of the potable water supply system occurs through an illegal crossconnection or an improperly installed, maintained or repaired device, or a device which has been bypassed, must bear the cost of clean-up of the potable water supply system.

CROSS- CONNECTION CONTROL REGULATIONS

SECTION 1. GENERAL POLICY

A. Purpose The purpose of these Rules and Regulations is:

1. 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.
2. To promote the elimination or control of existing cross- connections, actual or potential, between the public or consumer's potable water system and non-potable water systems, plumbing fixtures and sources or systems containing substances of unknown or questionable safety.
3. 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.

B. Application. These Rules and Regulations shall apply to all premises served by the public potable water supply system of the Village of Richmond.

C. Policy. The owner or 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 judgement of the Superintendent of Public Works or his authorized representative, an approved backflow prevention device is necessary for the safety of the public water supply system, the Superintendent of Public Works shall give notice to the consumer to install such approved backflow prevention device at each service connection to the 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 Section 5D(4) below for a period of at least five years. The Superintendent of Public Works may require the consumer to submit a cross-connection inspection report to the Village of Richmond to assist in determining whether or not service line protection will be required. All cross- connection inspections shall be conducted by a cross-Connection Control Device Inspector certified by the Illinois Environmental Protection Agency.

SECTION 2. DEFINITIONS

A. The following definitions shall apply in the interpretation and enforcement of these regulations:

1. "Fixed proper air gap" means the unobstructed vertical distance through the free atmosphere between the water discharge point and the flood level rim of the receptacle.
2. "Agency" means Illinois Environmental Protection Agency.

3. "Approved" means backflow prevention devices or methods approved by the Research Foundation for Cross -Connect ion Control of the University of Southern California, Association of State Sanitary Engineers, American Water Works Association, American National Standards Institute or certified by the National Sanitation Foundation.
4. "Auxiliary Water System" means any water source or system 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 another purveyor's public water supply system; or 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 or system over which the water purveyor does not have control .
5. "Backflow" means the f low 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.
6. "Backflow Prevention Device" means 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 IL Plumbing Code and the IL EPA.
7. "Consumer" or "Customer" means the owner, official custodian or person in control of any premises supplied by or in any manner connected to a public water system.
8. "Consumer's Water System" means any water system located on the customer's premises. A building plumbing system is considered to be a customer's water system.
9. "Contamination" means an impairment of the quality of the water by entrance of any substance to a degree which could create a health hazard.
10. "Cross -connect ion" means any physical connection or arrangement between two 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 f low from one system into the other.

Direct cross -connection means a cross-connection formed when a water system is physically joined to a source of unknown or unsafe substance.

Indirect cross-connection means a cross-connection through which an unknown substance can be forced, drawn by vacuum or otherwise introduced into a safe potable water system.

11. "Double Check Valve Assembly" means 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 watertightness of each check valve.

12. "Health Hazard" means 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.
13. "Inspection" means 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 IL Plumbing Code, 77 IL. Adm. Code 604.
14. "Non-potable Water" means water not safe for drinking, personal , or culinary use as determined by the requirements of 35 IL. Adm. Code 604.
15. "Plumbing" means 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 beyond the foundation walls.
16. "Pollution" means 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.
17. "Potable Water" means water which meets the requirements of 35 IL Adm. Code 604 for drinking, culinary, and domestic purposes.
18. "Potential Cross -Connection" means 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.
19. "Process Fluid(s)" means 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 is 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
 - g. oils, gases, acids, alkalis and other liquid and gaseous fluids used in industrial or other processes, or for fire fighting purposes
20. "Public Water Supply" means 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 15 service connections or which regularly serve at least 25 persons at least 60 days-per year. A public water supply is either a "community water supply" or a "non-community water supply"
21. "Reduced Pressure Principle Backflow Prevention Device" means a device containing a minimum of two independently acting check valves together with an automatically operated pressure differential relief valve located between the two check valves and approved under ASSE Standard 1013. During normal flow and at the cessation of normal flow, the pressure between these two 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.
22. "Service Connection" means the opening, including all fittings and appurtenances, at the water main through which water is supplied to the user.
23. "Survey" means 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 that customer's piping system. The survey must be in written form, and should not be an actual plumbing inspection.
24. "Used Water" means 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.
25. "Water Purveyor" means the owner or official custodian of a public water system.

SECTION 3. WATER SYSTEM

A. The water system shall be considered as made up of two parts: the public water supply system and the consumer's water system.

B. 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 Superintendent of Water up to the point where the customer's water system begins.

C. 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.

D. 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.

E. 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.

SECTION 4. CROSS -CONNECT ION 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 insure proper operation on a continuing basis.

B.

1. 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.
2. There shall be no arrangement or connection by which an unsafe substance may enter a supply.

SECTION 5. SURVEY AND INVESTIGATIONS

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 testing, repair and maintenance of cross-connection control devices within the consumer's premises.

B. On request by the Superintendent of Public Works, or his authorized representative, the consumer shall furnish information regarding the piping system of systems or water use within the customer's premises. The consumer's premises shall be open at all reasonable times to the Superintendent of Public Works for the verification of information submitted by the inspection 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 IL Rev. Stat. 1987, Ch 111, par. 1103(l).

D. It is the responsibility of the water consumer to prevent backflow into the public water system by ensuring that:

1. All cross - connections are removed; or approved cross -connection control devices are installed for control of backflow and back-siphonage.
2. Cross-connection control devices shall be installed in accordance with the manufacturer's instructions.
3. Cross -connection control devices shall be inspected at the time of installation and 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 the time of installation and at least annually or more frequently if recommended by the manufacturer.
 - b. Records submitted to the community public water supply shall be available for inspection by Agency personnel in accordance with IL Rev. Stat. 1987, Ch 111 1/2, par. 1004(e).
 - c. Each device shall have a tag attached listing the date of most recent test, 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 servicing required
 - 5) repairs and date completed
 - 6) serving performed and dated completed

SECTION 6. WHERE PROTECTION IS REQUIRED

A. An approved backflow device shall be installed on all connections to the public water supply as described in the Plumbing Code, 77 IL Adm. Code 890 and the Agency's regulations 35 IL Adm. Code 680. In addition, an approved backflow prevention device shall be installed on each service line to a consumer's water system serving premises, where in the judgement of the Superintendent of Public Works, actual or potential hazards to the public water supply system exist.

B. 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:

1. Premises having an auxiliary water supply, unless such auxiliary supply is accepted as an additional source by the Superintendent of Public Works and the source is approved by the Illinois Environmental Protection Agency.

2. 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 Superintendent of Public Works.
3. Premises having internal cross - connections that, in the judgement of the Superintendent of Public Works and/or the Cross -Connection Control Device Inspector, are not correctable or intricate plumbing arrangements which make it impractical to determine whether or not cross -connections exist.
4. Premises where, because of security requirements or other prohibitions or restrictions, it is impossible or impractical to make a complete cross - connection survey.
5. Premises having a repeated history of cross connections being established or re-established.

C. An approved backflow device shall be installed on all connections to the public water supply as described in the Plumbing Code, 77 IL. Adm.'...(3ode 890 And the Agency's regulations 35 IL. Adm. Code 653. In addition, 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 Superintendent of Public Works determines that no actual or potential hazard to the public water supply system exists:

1. Hospitals, mortuaries, clinics, nursing homes
2. Laboratories
3. Piers, docks, waterfront facilities
4. Sewage treatment plant\$, sewage pumping stations or storm water pumping stations
5. Food or beverage processing plants
6. Chemical plants
7. Metal plating industries
8. Petroleum processing or storage plants
9. Radioactive material processing plants or nuclear reactors
10. Car washes
11. Pesticide, or herbicide or extermination plants and trucks
12. Farm service and fertilizer plants and trucks

SECTION 7. TYPE OF PROTECTION REQUIRED

- A. The type of protection required under Sections 6.1, 6.2 and 6.3 of these regulations shall depend on the degree of hazard which exists as follows:
1. 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.
 2. An approved fixed proper air gap separation or an approved reduced pressure principle backflow prevention assembly shall be installed where the public water supply system may be contaminated with a substance that could cause a system or health hazard.
 3. An approved fixed proper air gap separation or an approved reduced pressure principle backflow prevention assembly or a double check valve assembly shall be installed where the public water supply system may be polluted with substances that could cause a pollution hazard not dangerous to health.
- B. The type of protection required under Section 6.4 and 6.5 of these regulations shall be an approved fixed proper air gap separation or an approved reduced pressure principle backflow prevention device.
- C. 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 safety systems connected to the public water supply when:
1. The fire safety system contains antifreeze, fire retardant or other chemicals;
 2. water is pumped into the system from another source; or
 3. water flows by gravity from a non-potable source; or water can be pumped into the fire safety system from any other source;
 4. there is a connection whereby another source can be introduced into the fire safety system.
- D. All other fire safety systems connected to the potable water supply shall be protected by a double check valve assembly on metered service lines and a double detector check valve assembly on unmetered service lines.

SECTION 8. BACKFLOW PREVENTION DEVICES

- A. All backflow prevention devices or methods require 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 specification.

- B. Installation of approved devices shall be made in accordance with the manufacturer's instructions. Maintenance as recommended by the manufacturer of the device shall be performed. Manufacturer's maintenance manual shall be available on-site.

SECTION 9. INSPECTION AND MAINTENANCE

- A. It shall be the duty of the consumer at any premises on which backflow prevention devices required by these regulations are installed to have inspection, 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 to document that a proper vertical distance is maintained between the discharge point of the service line and the flood level rim of the receptacle at the time of installation and at least annually thereafter. Corrections to improper or bypassed air gaps shall be made within 24 hours.
 - 2. Double check valve assemblies shall be inspected and tested at time of installation and at least annually thereafter, and required service performed within five (5) days.
 - 3. Reduced pressure principle backflow prevention assemblies shall be tested at the time of installation and at least annually or more frequently if recommended by the manufacturer, and required service performed within five (5) days.
- B. 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. 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. 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 servicing required
 - 5. Repairs and date completed
 - 6. Servicing performed and date completed.
- E. 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 as required by Section 9A.
- F. Backflow prevention devices shall not be bypassed, made inoperative, removed or otherwise made ineffective without specific authorization by the Superintendent of Public Works.

SECTION 10. 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 cut-off device designed to shut off the booster pump when the pressure in the service line on the suction side of the pump drops to 20 psi or less.
- B. It shall be the duty of the water consumer to maintain the low pressure cut-off device in proper working order and to certify to the Superintendent of Public Works at least once a year, that the device is operable.

SECTION 11. VIOLATIONS

- A. The Superintendent of Public Works 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 Superintendent of Public Works, 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 cut-off required by these regulations is not installed and maintained in working order.
- B. 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 Superintendent of Public Works and the required reconnection fee is paid.
- C. Water service to such premises shall not be restored until the consumer has corrected or eliminated such conditions or defects on conformance with these regulations and to the satisfaction of the Superintendent of Public Works.
- D. Neither the Village of Richmond, the Superintendent of Public Works, or its agents or assigns shall be liable to any customers of the village of Richmond for any injury, damages or lost revenues which may result from termination of said customer's water supply in accordance with the terms of this ordinance, whether or not said, termination of the water supply was with or without notice.
- E. The consumer responsible for back-siphoned material or contamination through backflow, if contamination of the potable water supply system occurs through an illegal cross connection or an improperly installed, maintained or repaired device, or a device which has been bypassed, must bear the cost of clean-up of the potable water supply system.
- F. Any person found to be violating any provision of this Ordinance shall be served with written notice stating the notice of the violation and providing a reasonable time limit for the, satisfactory correction thereof . The offender shall , within the period of time stated in such notice, permanently cease all violation.
- G. Any person violating any of the provisions of this Ordinance, in addition to the fine provided, shall become liable to the Village for any expense, loss or damage occasioned by the Village by reason of such violation, whether the same was caused before or after notice.