

## ARTICLE 11.1200 CROSS-CONNECTION CONTROL

### Sec. 11.1201 Purpose

The purpose of this article is:

- (1) To protect the public potable water supply (city, county, state, or province) from the possibility of contamination or pollution by isolating within the customer's internal distribution system(s) or the customer's private water system(s) such contaminants or pollutants that could backflow into the public water system; and,
- (2) To promote the elimination or control of existing cross-connections, actual or potential, between the customer's in-plant potable water system(s) and nonpotable water systems, plumbing fixtures, and industrial piping systems; and,
- (3) To provide for the maintenance of a continuing program of cross-connection control that will systematically and effectively prevent the contamination or pollution of all potable water systems.

### Sec. 11.1202 Responsibility

The (water commissioner or state or provincial health official) shall be responsible for the protection of the public potable water distribution system from contamination or pollution due to the backflow of contaminants or pollutants through the water service connection. If, in the judgment of said (water commissioner or health official) an approved backflow-prevention assembly is required (at the customer's water service connection; or within the customer's private water system) for the safety of the water system, the (water commissioner or health official) or his/her designated agent shall give notice in writing to said customer to install such an approved backflow-prevention assembly(s) at specific location(s) on his/her premises. The customer shall immediately install such approved assembly(s) at his/her own expense; and failure, refusal, or inability on the part of the customer to install, have tested, and maintain said assembly(s) shall constitute grounds for discontinuing water service to the premises until such requirements have been satisfactorily met.

### Sec. 11.1203 Definitions

**Water Commissioner or Health Official** The (commissioner or health official) in charge of the ( water department or health department) of the ( city, county, state, or province) is invince with, the authority and responsibility for the implementation of an effective cross-connection control program and for the enforcement of the provisions of this article.

**Approved** Accepted by the authority responsible as meeting an applicable specification stated or city in this article or as suitable for the proposed use.

**Auxiliary Water Supply** Any water supply on or available to the premises other than the purveyor's approved public water supply. These auxiliary water may include water from anther purveyor's public potable water supply or any natural source(s), such as a well, spring, river stream, harbor, and so forth; used waters; or industrial fluids. These water may be contaminated or polluted, or they may be objectionable and constitute an unacceptable water source over which the water purveyor dose not have sanitary control.

**Backflow** The undesirable reversal of flow in a potable water distribution system as a result of a cross-connection.

**Backpressure** A pressure, higher than the supply pressure, caused by a pump, elevated tank, boiler, or any other means that may cause backflow.

**Backsiphonage** Backflow caused by negative or reduced pressure in the supply piping.

**Backflow Preventer** An assembly or designed to prevent backflow.

**Air Cap** The unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or faucet conveying water or waste to a tank, plumbing fixture, receptor, or other assembly and the flood level rim of the receptacle. These vertical, physical separations must be at least twice the diameter of the water supply outlet, never than 1 in. (25mm).

**Reduced-Pressure Backflow-Prevention Assembly** The approved reduced-pressure principle backflow-prevention assembly consists of two independently acting approved check valve together with a hydraulically operating, mechanically independent pressure differential relief valve located between the check valve and blow the first check valve. These units are located between two tightly closing resilient-seated shutoff valve as an assembly and equipped with properly located resilient-seated test cocks.

**Double Check Valve Assembly** The approved double check valve assembly consists of two internally loaded check valve, either spring loaded or internally weighted, installed as a unit between two tightly closing resilient-seated shutoff valve and fittings with properly located resilient-seated test cocks. This assembly shall only be used to protect against a nonhealth (that is, a pollutant).

**Contamination** An impairment of a potable water supply by the introduction or admission of any foreign substance that degrades the quality and creates a health hazard.

**Cross-Connection** A connection or potential connection between any part of a potable water system and any other environment containing other substances in a manner that, under any circumstances would allow such substances to enter the potable water system. Other substances may be gases, liquids, or solids, such as chemical, waste products, steam, water from other sources (potable or nonpotable), or any matter that may change the color or add odor to the water.

**Cross-Connection -Controlled** A connection between a potable water system and a nonpotable water system with an approved backflow-prevention assembly properly installed and maintained so that it will continuously afford the protection commensurate with the degree of hazard.

**Cross-Connection Control by Containment** The installation of an approved backflow-prevention assembly at the water service connection to any customer's premises, where it is physically and economically unfeasible to find and permanently eliminate or control all actual or potential cross-connections within the customer's water system; or it shall mean the installation of an approved backflow-prevention assembly on the service line leading to and supplying a portion of a customer's water system where there are actual or potential cross-connection.

**Hazard, Degree of** The term is derived from an evaluation of the potential risk to public health and the adverse effect of the hazard upon the potable water system.

**Hazard-Health** A cross-connection or potential cross-connection involving any substance that could, if introduced in the potable water supply, cause death, illness, spread disease, or have a high probability of causing such effects.

**Hazard-Plumbing** A plumbing type cross-connection in a consumer's potable water system that has not been properly protected by an approved air gap or an approved backflow prevention assembly.

**Hazard-Nonhealth** A cross-connection or potential cross-connection involving any substance that generally would not be a health hazard but would constitute a nuisance or be aesthetically objectionable, if introduced into the potable water supply.

**Hazard-System** An actual or potential threat of severe damage to the physical properties of the public potable water system or the consumer's potable water system or of a pollution or contamination that would have a protracted effect on the quality of the potable water in the system.

**Industrial Fluids System** Any system containing a fluid or solution that may be chemically, biologically, otherwise contaminated or polluted in a form or concentration, such as would constitute health, system, pollution, or plumbing hazard, if introduced into an approved water supply. This may include, but not be limited to: polluted or contaminated waters; all types of process water and used water originating from the public potable water system that may have deteriorated in sanitary quality; chemicals in fluid form; plating acids and alkalies; circulating cooling waters connected to an open cooling tower; and/or cooling towers that are chemically or biologically treated or stabilized with toxic substances; contaminated natural water such as wells, spring, stream, rivers, bays, harbors, seas, irrigation canals or systems, and so forth; oil, gases, glycerine, paraffins, caustic and acid solutions, and other liquid and gaseous fluids used in industrial or other, purposes for fire-fighting purposes.

**Pollution** The presence of any foreign substance in water that tends to degrade its quality so as to constitute a nonhealth hazard or impair the usefulness of the water.

**Water-Potable** Water that is safe for human consumption as described by the public health authority having jurisdiction.

**Water Nonpotable** Water that is not safe for human consumption or that is of questionable quality.

**Service Connection** The terminal end of a service connection from the public potable water system, where the water purveyor loses jurisdiction and sanitary control over the water at its point of delivery to the customer's water system. If a meter is installed at the end of the service connection, then the service connection shall mean the downstream end of the meter. There should be no unprotected takeoffs from the service line ahead of any meter or backflow-prevention assembly located at the point of delivery to the customer's water system. Service connection shall also include water service connection from a fire hydrant and all other temporary or emergency water service connections from the public potable water system.

**Water -Used** Any water supply by a water purveyor from a public potable water to a system to a consumer's water system after it has passed through the point of delivery and is no longer under the sanitary control of the water purveyor.

#### Sec. 11.1204 Requirements

##### (a) Water System

- (1) The water system shall be considered as made up of two parts: the utility system and the customer system.
- (2) Utility system shall consist of the source facilities and the distribution system, and shall include all those facilities of the water system under the complete control of the utility, up to the point where the customer's system begins.
- (3) The source shall include all components of the facilities utilized in the production, treatment, storage, and delivery of water to the distribution system.
- (4) The distribution system shall include the network of conduits used for the delivery of water from the source to the customer's system.
- (5) The customer's system shall include those parts of the facilities beyond the termination of the utility distribution system that are utilized in covering utility-delivered domestic water to points of use.

##### (b) Policy

(1) No water service connection to any premises shall be installed or maintained by the water purveyor unless the water supply is protected as required by state/provincial laws and regulations and this (name of legal document). Service of water to any premises be discontinued by the water purveyor if a backflow-prevention assembly required by this (name of legal document) is not installed, tested, and maintained, or if it is found that a backflow prevention assembly has been removed, bypassed, or if an unprotected cross-connection exists on the premises. Service will not be restored until such conditions or defects are corrected.

(2) The customer's system should be open for inspection at all reasonable times to authorized representatives of the (water or health agency name) to determine whether cross-connections or other structural or sanitary hazards, including violations of these regulations, exist. When such a condition become known, the (water commissioner or health officer) shall deny or immediately discontinue service to the premises by providing for a physical break in the until the customer has corrected the condition(s) in conformance with state/provincial and city statutes relating to plumbing and water supplies and the regulations adopted pursuant thereto.

(3) An approved backflow-prevention assembly shall be installed on each service line to a customer's water system at or near the property line or immediately inside the building being served; but in all cases, before the first branch line leading off the service line wherever the following conditions exist:

(A) In the case of premises having auxiliary water supply that is not or may not be of safe bacteriological or chemical quality and that is not acceptable as an additional source by the (water commissioner or health authority), the public water system shall be protector against backflow from the premises by installing an approved backflow-prevention assembly in the service line, appropriate to the degree of hazard.

(B) In the case of premises on which any industrial fluids or any other objectionable substances are handled in such a fashion as to create ark actual or potential hazard to the public water system, the public system shall be protected against backflow from the premises by installing an approved backflow prevention assembly in the service line, appropriate to the degree of hazard. This shall include the handling of process water and water originating from the utility system that have been subject to deterioration in quality.

(C) In the case of premises having (1) internal cross-connections that cannot be permanently corrected and controlled, or (2) intricate plumbing and piping arrangements or where entry to all portions of the premises is not readily accessible for inspection purposes, making it impracticable or impossible to ascertain whether or not dangerous cross-connections exist, the public water system shall be protected against backflow from the premises by installing an approved backflow-prevention assembly in the service line.

(4) The type of protective assembly required under subsections (3)(A), (3)(B), and (3)(C) shall depend upon the degree of hazard that exist as follows:

(A) In the case of any premises where there is an auxiliary water supply as stated in subsection (3)(A) of this section and it is not subject to any of the following rules, the public water system shall be protected by an approved air-gap separation or an approved reduced-pressure principle backflow- prevention assembly.

(B) In the case of any premises where there is water or substance that would be objectionable but not hazardous to health, if introduced into the public water system, the public water system shall be protected by an approved double check valve assembly.

(C) In the case of any premises where there is any material dangerous to health that is handled in such a fashion as to create or potential hazard to the public water system, the public water system shall be protected by an approved air-gap separation or an approved reduced-pressure principle backflow-

prevention assembly. Examples of premises where these conditions will exist include sewage treatment plant, sewage pumping stations, chemical manufacturing plants, hospitals, mortuaries, and plating plants.

(D) In the case of any premises where there are “uncontrolled” cross-connections, either actual or potential, the public water system shall be protected by an approved air-gap separation or an approved reduced-pressure principle backflow-prevention assembly at the service connection.

(E) In the case of any premises where, because of security requirements or other prohibitions or restrictions it is impossible or impractical to make a complete in-plant cross-connection survey, the public water system shall be protected against backflow from the premises by either an approved air-gap separation or an approved reduced-pressure principle backflow-prevention assembly on each service to the premises.

(F) In the case of any premises where, in the opinion of the (water commissioner or health officer), an undue health threat is posed because of the presence of extremely toxic substances, the (water commissioner or health officer) may require an air-gap at the service connection to protect the public water system and requirement will be at the discretion of the (water commissioner or health officer) and is dependent on the degree of hazard.

(5) Any backflow-prevention assembly required herein shall be a model and size approved by the (water commissioner or health official). The term Approved Backflow-Prevention Assembly shall mean an assembly that has been manufactured in full conformance with the standards established by the American Water Works Association titled:

AWWA C510-89-- Standard for Double Check Valve Backflow-Prevention Assembly, and  
AWWA C511-89--Standard for Reduced-Pressure Principle BackflowPrevention Assembly,

And have met completely the laboratory and field performance specifications of the Foundation for Cross-Connection Control and Hydraulic Research of the University of Southern California established by

“Specification of Backflow-Prevention Assemblies” --Sec. 10 of the most current issue of the Manual of Cross-connection Control.

Said AWWA and FCCHR standards and specifications have been adopted by the (water commissioner or health official). Final approval shall be evidenced by a “Certificate of Approval” issued by an approved testing laboratory certifying full compliance with said AWWA standards and FCCHR specifications.

The following testing laboratory has been qualified by the (water commissioner or health officer) to test and certify backflow-preventers: Foundation for Cross-Connection Control and Hydraulic Research University of Southern California, University Park Los Angeles, CA 90089.

Testing laboratories, other than the laboratory listed above, will be added to an approved list as they are qualified by the (water commissioner or health officer).

Backflow-prevention that may be subjected to backpressure or backsiphonage that have been fully tested and have been granted a certificate of approval by said qualified laboratory and are listed on the laboratory’s current list of approved backflow-prevention assemblies may be used without further testing or qualification.

(6) It shall be the duty of the customer-user at any premises where backflow-prevention assemblies are installed to have certified inspections and operational tests made at least once per year. In those instances where the (water commissioner or health officer) deems the hazard to be great enough, certified inspections may be required at more frequent intervals. These inspections and tests shall be at the expense of the water user and shall be performed by the assembly manufacturer’s representative, (water department)

personnel, or by a certified tester approved by the (water commissioner or health officer). It shall be the duty of the (water commissioner or health officer) to see that these tests are made in a timely manner. The customer-user shall notify the (water commissioner or health officer) in advance when the tests are to be undertaken so that the customer-user may witness the tests if so desired. These assemblies shall be repaired, over-hauled, or replaced at the expense of the customer-user whenever said assemblies are found to be defective.

Records of such tests, repairs, and overhaul shall be kept and made available to the (water commissioner or health officer).

(7) All presently installed backflow-prevention assemblies that do not meet the requirements of this section but were approved assemblies for the purpose described herein at the time of installation and that have been properly maintained, shall, except for the inspection and maintenance requirements under subsection (6), be excluded from the requirements of these rules so long as the (water commissioner or health officer) is assured that they will satisfactorily protect the utility system. Whenever the existing assembly is moved from the present location, requires more than minimum maintenance, or when the (water commissioner or health officer) finds that the maintenance constitutes a hazard to health, the unit shall be replaced by an approved backflow-prevention assembly meeting the requirements of this section.

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