

Chapter 13.08

CONTROL OF BACKFLOW AND CROSS-CONNECTIONS

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13.08.010 Purpose.

The purpose of this chapter is:

- A. To protect the public potable water supply of Hyrum City from the possibility of contamination of pollution by isolating within its customers' internal distribution system(s) or its customer's private water system such contaminants or pollutants which could backflow or back-siphon into the public water supply system; and
- B. To promote the elimination or control of existing cross-connections, actual or potential, between its customers' in-plant potable water system(s) and nonpotable water systems, plumbing fixtures and industrial piping systems; and
- C. To provide for the maintenance of a continuing program of cross-connection control which will systematically and effectively prevent the contamination or pollution of all potable water systems. (Ord. 82-08 § 1 (part): prior code § 14-110A (A))

13.08.020 Responsibility for protection of water system-Authority.

- A. The superintendent of the water department, hereinafter referred to as "superintendent," shall be responsible for the protection of the public potable water distribution system from contamination or pollution due to the backflow or backsiphonage of contaminants or pollutants through

the water service connection. If, in the judgment of the superintendent, an approved backflow prevention device is required, at the city's water service connection to any customer's premises, for the safety of the water system, the superintendent or his designated agent shall give notice in writing to the customer to install such an approved backflow prevention device at each service connection to his premises. The customer shall immediately install such approved device or devices at his own expense; and failure, refusal or inability on the part of the customer to install the device or devices immediately shall constitute grounds for discontinuing water service to the premises until such device or devices have been properly installed.

- B. The superintendent of the Hyrum City water department is vested with the authority and responsibility for the implementation of an effective cross-connection control program and for the enforcement of the provisions of this chapter. (Ord. 82.08 § 1 (part): § 14-110 A (B), 14-111A (A))

13.08.030 Definitions.

As used herein:

"Air-gap" means the unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or faucet supplying water to a tank, plumbing fixture or other device and the flood-level rim of the vessel. An approved air-gap shall be at least double the diameter of the supply pipe, measured vertically, above the top of the rim of the vessel; and, in no case less than one inch. When an air-gap is used at the service connection to prevent the contamination or pollution of the public potable water system, an emergency by-pass shall be installed around the air-gap system and an approved reduced pressure principle device shall be installed in the by-pass system.

"Approved" means accepted by the superintendent as meeting an acceptable specification stated or cited in this chapter, or as suitable for the proposed use.

"Auxiliary water supply" means any water supply on or available to the premises other than Hyrum City's approved public potable water supply. These auxiliary waters may include water from another municipality's public potable water supply or any natural source(s) such as a well, spring, river, stream, harbor, etc., or used waters or industrial fluids. These waters may be polluted or contaminated or they may be objectionable and constitute an unacceptable water source over which Hyrum City does not have sanitary control.

"Backflow" means the flow of water or other liquids, mixtures or substances under pressure into the distributing pipes of a potable water supply from any source or sources other than its intended source.

"Backflow preventer" means a device or means designed to prevent backflow-siphonage.

"Backsiphonage" means the flow of water or other liquids, mixtures or substances into the distributing pipes of a potable water supply system from any source other than its intended source caused by the sudden reduction of pressure in the potable water supply system.

"Contamination" means an impairment of the quality of the potable water by sewage, industrial fluids or waste liquids, compounds or other materials, to a degree which creates an actual hazard to the public health through poisoning or thorough the spread of disease.

"Controlled cross-connection" means a connection between a potable water system and a non-potable water system with an approved backflow prevention device properly installed that will continuously afford the protection commensurate with the degree of hazard.

"Cross-connection" means any physical connection or arrangement of piping or fixtures between two otherwise separate piping systems one of which contains potable water and the other nonpotable water or industrial fluids of questionable safety, through which, or because of which, backflow or backsiphonage may occur into the potable water system. A water service connection between a public potable water distribution system and a customer's water distribution system which is cross-connected to a contaminated fixture, industrial fluid system or with a potentially contaminated supply or auxiliary water system, constitutes one type of cross-connection. Other types of cross-connections include connections such as swing connections, removable sections, four-way plug valves, spools, dummy sections of pipe, swivel or changeover devices, sliding multiport tube, solid connections, etc.

"Cross-connection control by containment" means:

- A. The installation of an approved backflow prevention device 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
- B. The installation of an approved backflow prevention device on the service line leading to and supplying a portion of a customer's

water system where there are actual or potential cross-connections which cannot be effectively eliminated or controlled at the point of cross-connection.

"Degree of hazard" is derived from an evaluation of the potential risk to public health and the adverse effect of the hazard upon the potable water system.

"Double check valve assembly" means an assembly of two independently operating approved check valves with tightly closing shut-off valves on each side of the check valves, plus properly located test cocks for the testing of each check valve. The entire assembly shall meet the design and performance specifications and approval of a recognized and city approved testing agency for backflow prevention devices. To be approved these devices must be readily accessible for in-line maintenance and testing.

"Health hazard" means any condition, device or practice in the water supply system and its operation which could create, or in the judgment of the superintendent may create a danger to the health and well-being of the water consumer. An example of a health hazard is a structural defect, including cross-connections, in a water supply system.

"Industrial fluids system" means any system containing a fluid or solution which may be chemically, biologically or otherwise contaminated or polluted in a form or concentration such as would constitute a health, system, pollutional or plumbing hazard if introduced into an approved water supply. This may include, but not be limited to:

- A. Polluted or contaminated waters;
- B. All types of process waters and used waters originating from the public potable water system which may have deteriorated in sanitary quality;
- C. Chemicals in fluid form;
- D. Plating acids and alkalies, circulated cooling waters connected to an open cooling tower and/or cooling towers that are chemically or biologically treated or stabilized with toxic substances;
- E. Contaminated natural waters such as from wells, springs, streams, rivers, bays, harbors, seas, irrigation canals or systems, etc.;
- F. Oils, gases, glycerine, paraffins, caustic and acid solutions and other liquid and gaseous fluids used in industrial or other purposes for firefighting purposes.

"Nonpotable water" means water which is not safe for human consumption or which is of questionable potability.

"Plumbing hazard" means a plumbing-type cross-connection

in a consumer's potable water system that has not been properly protected by a vacuum breaker, air-gap separation or backflow prevention device. Unprotected plumbing-type cross-connections are considered to be a health hazard.

"Pollution" means the presence of any foreign substance (organic, inorganic or biological) in water which tends to degrade its quality so as to constitute a hazard or impair the usefulness or quality of the water to a degree which does not create an actual hazard to the public health but which does adversely and unreasonably affect such waters for domestic use.

"Pollutional hazard" means an actual or potential threat to the physical properties of the water system or to the potability of the public or the consumer's potable water system which would constitute a nuisance or be aesthetically objectionable or could cause damage to the system or its appurtenances, but would not be dangerous to health.

"Potable waters" means any water which, according to recognized standards is safe for human consumption.

"Reduced pressure principle device" means an assembly of two independently operating approved check valves with an automatically operating differential relief valve between the two check valves, tightly closing shut-off valves on either side of the check valves, plus properly located test cocks for the testing of the check and relief valves. The entire assembly shall meet the design and performance specifications and approval of a recognized and city-approved testing agency for backflow prevention assemblies. The device shall operate to maintain the pressure in the zone between the two check valves at a level less than the pressure on the public water supply side of the device. At cessation of normal flow the pressure between the two check valves shall be less than the pressure on the public water supply side of the device. In case of leakage of either of the check valves the differential relief valve shall operate to maintain the reduced pressure in the zone between the check valves by discharging to the atmosphere. When the inlet pressure is two pounds per square inch or less, the relief valve shall open to the atmosphere. To be approved these devices must be readily accessible for in-line maintenance and testing and be installed in a location where no part of the device will be submerged.

"System hazard" means 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 which would have a protracted effect on the quality of the potable water in the system.

"Used water" means any water supplied by Hyrum City from a public potable water 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 Hyrum City.

"Water service connections" means the terminal end of a service connection from the public potable water system (i.e., where Hyrum City loses jurisdiction and sanitary control over the water at its point of delivery to the consumer's water system). If a meter is installed at the end of the service connection, then the "service connection" means the downstream end of the meter. There should be no unprotected takeoffs from the service line ahead of any meter or backflow prevention device located at a point of delivery to the customer's water system. Service connection also includes water service connection from a fire hydrant and all other temporary or emergency water service connections from the public potable water system. (Ord. 82-08 § 1 (part): prior code § 14-111A (B)C(Q))

13.08.040 Water system-Components.

The water system shall be considered as made up of two parts:

The utility system; and The consumer system. (Ord. 82-08 § 1 (part): prior code § 14-112A (A) (1))

13.08.050 Utility system-Components.

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.

- A. The source includes all components of the facilities utilized in the production, treatment, storage and delivery of water to the distribution system.
- B. The distribution system includes the network of conduits used for the delivery of water from the source of the customer's system. (Ord. 82-08 § 1 (part): prior code § 14-112A (A) (2), (3), (4))

13.08.060 Customer's system-Components.

The customer's system includes those parts of the facilities beyond the termination of the utility distribution system which are utilized in conveying utility-delivered domestic water to points of use. (Ord. 82-08 § 1 (part): prior code § 14-112A (A) (5))

13.08.070 Water service connection-Protection of water supply required.

No water service connection to any premises shall be installed or maintained by Hyrum City unless the water supply is protected as required by state laws and regulations and

this chapter. Service of water to any premises shall be discontinued by Hyrum City if a backflow prevention device required by this chapter is not installed, tested and maintained, or if it is found that a backflow prevention device 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. (Ord. 82-08 § 1 (part): prior code § 14-112A (B) (1))

13.08.080 Customer's system-Inspection-Response to violation.

The customer's system should be open for inspection at all reasonable times to authorized representatives of the water department to determine whether cross-connections or other structural or sanitary hazards, including violations of these regulations, exist. When such a condition becomes known, the superintendent shall deny or immediately discontinue service to the premises by providing for a physical break in the service line until the customer has corrected the condition(s) in conformance with state and city statutes relating to plumbing and water supplies and the regulations adopted pursuant thereto. (Ord. 82-08 § 1 (part): prior code § 14-112A (B) (2))

13.08.090 Backflow prevention device-Conditions requiring installation on service lines.

An approved backflow prevention device shall also 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 an auxiliary water supply which is not or may not be of safe bacteriological or chemical quality and which is not acceptable as an additional source by the superintendent, the public water system shall be protected against backflow from the premises by installing a backflow prevention device 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 substance is handled in such a fashion as to create an actual or potential hazard to the public water system, the public system shall be protected against backflow from the premises by installing a backflow prevention device in the service line appropriate to the degree of hazard. This shall include the handling of process waters and waters originating from the utility system which 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 a backflow prevention device in the service line. (Ord. 82-08 § 1 (part): prior code § 14-112A (B) (3))

13.08.100 Backflow prevention device-Type required.

The type of protective device required under Section 13.08.090 shall depend upon the degree of hazard which exists as follows:

- A. In the case of any premises where there is an auxiliary water supply as stated in Section 13.08.090(A) 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 device.
- 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 which is handled in such a fashion as to create an actual 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 device. Examples of premises where these conditions will exist include sewage treatment plants, 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 device 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 or backsiphonage from the premises by the installation of a backflow prevention device in the service line. In this case, maximum protection will be required; that is, an approved air-gap separation or an approved reduced pressure principle backflow prevention device shall be installed in each service to the premises. (Ord. 82-08 § 1 (part): prior code § 14-112A (B) (4))

13.08.110 Backflow prevention devices-Standards and specifications.

- A. Any backflow prevention device required herein shall be of a model and size approved by the superintendent. The term "approved backflow prevention device" means a device that has been manufactured in full conformance with the standards established by the American Water Works Association entitled AAWWA C506-78, Standards for Reduced Pressure Principle and Double Check Valve Backflow Prevention Devices; or the IAPMO; or the current Utah Plumbing Code, 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 Specifications of Backflow Prevention Devices C#69-2, dated March 1969, or the most current issue.
- B. The AWWA and FCCC&HR standards and specifications have been adopted by the superintendent. Final approval shall be evidenced by a certificate of approval issued by an approved testing laboratory certifying full compliance with the AWWA standards and FCCC&HR specifications.
- C. The following testing laboratory has been qualified by the superintendent to test and certify backflow preventers:
 - Foundation for Cross-Connection Control &
Hydraulic Research
University of Southern California
University Park
Los Angeles, California 90007
- D. Testing laboratories other than the laboratory listed in subsection C of this section will be added to an approved list as they are qualified by the superintendent.
- E. Backflow preventers which may be subjected to back pressure or backsiphonage that have been fully tested and have been granted a certificate of approval by the qualified laboratory and are listed on the laboratory's current list of approved devices may be used without further test or qualification. (Ord. 82-08 § 1 (part): prior code § 14-112A (B) (5))

13.08.120 Backflow prevention devices-Inspection-Operational tests.

It shall be the duty of the customer-user at any premises where backflow prevention devices are installed to have certified inspections and operational tests made at least once per year. In those instances where the superintendent deems the hazard to be great enough, he may require certified inspections at more frequent intervals. These inspections and tests shall be at the expense of the water user and shall be performed by the device manufacturer's representative or by a

certified tester approved by the superintendent. It shall be the duty of the superintendent to see that these timely tests are made. It is unlawful for any Hyrum City employee to make such tests. The customer-user shall notify the superintendent in advance when the tests are to be undertaken so that he or his representative may witness the tests if so desired. These devices shall be repaired, overhauled or replaced at the expense of the customer-user whenever the devices are found to be defective. Records of such tests, repairs and overhaul shall be kept and made available on request to the superintendent and to the State Environmental Health Department. (Ord. 82-08 § 1 (part): prior code § 14-112A (B) (6))

**13.08.130 Presently installed backflow prevention devices-
Exclusion from requirements.**

All presently installed backflow prevention devices which do not meet the requirements of this chapter, but were approved devices for the purposes described herein at the time of installation and which have been properly maintained, shall, except for the inspection and maintenance requirements under Section 13.08.120, be excluded from the requirements of these rules so long as the superintendent is assured that they will satisfactorily protect the utility system. Whenever the existing device is moved from the present location or requires more than minimum maintenance or when the superintendent finds that the maintenance constitutes a hazard to health, the unit shall be replaced by a backflow prevention device meeting the requirements of this chapter. (Ord. 82-08 § 1 (part): prior code § 14-112A (B) (7))