

CHAPTER 15.41

CROSS-CONNECTIONS

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15.41.010: Purpose: This Chapter of the City of Kennewick Municipal Code is intended to protect public health through the elimination and prevention of contamination caused by cross-connections to the City of Kennewick public water system. This Chapter complies with the requirements of the Washington Administrative Code (WAC) 246-290-490. (Ord. 3996 Sec. 1, 2001; Ord. 2700 Sec. 1, 1982; Ord. 2490 Sec. 9 (part), 1980; Ord. 2318 Sec. 1 (part), 1979)

15.41.020: Application: This chapter applies throughout the City of Kennewick and outside the City of Kennewick to every premises and the owners and occupants thereof served by the water system of the City of Kennewick. It applies to all systems installed prior to or after its enactment. Every owner and occupant of any premises covered by this chapter is responsible for compliance with its terms and shall be strictly liable for all damage incurred as a result of failure to comply with the express terms and provisions contained herein. (Ord. 2490 Sec. 9 (part), 1980; Ord. 2318 Sec. 1 (part), 1979)

15.41.030: Regulatory Authority: WAC 246-290-490 applies to cross-connection control beginning at the water supply source, including all the public water treatment, storage and distribution facilities, and ends at the point of delivery to the consumer's water system, which begins at the downstream end of the service connection or water meter. Under chapter 19.27 RCW, the responsibility for cross-connection control within the consumer's water system falls under the jurisdiction of the local administrative authority. (Ord. 3996 Sec. 2, 2001; Ord. 2681 Sec. 1, (part), 1982; Ord. 2490 Sec. 9 (part), 1980; Ord. 2318 Sec. 1 (part), 1979)

15.41.040: Enforcement: The Director of Public Works will administer the provisions of this chapter. The Director will designate cross-connection specialists and propound all needful rules and regulations to carry these provisions into effect. Any deviation, modification or

changes from approved standards must be approved by the Director of Public Works or his/her designated representative. (Ord. 3996 Sec. 3, 2001: Ord. 2681 Sec. 1, (part), 1982: Ord. 2490 Sec.9 (part), 1980: Ord. 2318 Sec. 1 (part), 1979)

15.41.050: Definitions:

- (1) Abbreviations and Acronyms:
 - (a) AG - air gap;
 - (b) AVB - atmospheric vacuum breaker;
 - (c) AWWA - American Water Works Association;
 - (d) BAT - backflow assembly tester;
 - (e) CCS - cross-connection control specialist;
 - (f) DCDA - double check detector assembly;
 - (g) DCVA - double check valve assembly;
 - (h) PVBA - pressure vacuum breaker assembly;
 - (i) RPBA - reduced pressure backflow assembly;
 - (j) RPDA - reduced pressure detector assembly;
 - (k) SVBA - spill resistant vacuum breaker assembly;
 - (l) UBC - Uniform Building Code;
 - (m) UPC - Uniform Plumbing Code;
 - (n) WAC - Washington Administrative Code.
- (2) Terms
 - (a) *“Approved Air Gap”* means a physical separation between the free-flowing end of a potable water supply pipeline and the overflow rim of an open or nonpressurized receiving vessel. The separation must be at least: Twice the diameter of the supply piping measured vertically from the overflow rim of the receiving vessel, and in no case be less than one inch, when unaffected by vertical surfaces (sidewalls); and: Three times the diameter of the supply piping, if the horizontal distance between the supply pipe and a vertical surface (sidewall) is less than or equal to three times the diameter of the supply pipe, or if the horizontal distance between the supply pipe and intersecting vertical surfaces (sidewalls) is less than or equal to four times the diameter of the supply pipe and in no case less than one and one-half inches.
 - (b) *“Approved Atmospheric Vacuum Breaker”* means an AVB of make, model, and size that is approved by the department. AVBs that appear on the current approved backflow prevention assemblies list developed by the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research or that are listed or approved by other nationally recognized testing agencies (such as IAPMO, ANSI, or UL) acceptable to the local administrative authority are considered approved by the department.
 - (c) *“Approved Backflow Preventer”* means an approved air gap, an approved backflow prevention assembly, or an approved AVB. The terms "approved backflow preventer," "approved air gap," or "approved backflow prevention assembly" refer only to those approved backflow preventers relied upon by the City of Kennewick for the protection of the public water system.
 - (d) *“Approved Backflow Prevention Assembly”* means an RPBA, RPDA, DCVA, DCDA, PVBA, or SVBA of make, model, and size that is approved by the department. Assemblies that appear on the current approved backflow prevention assemblies list developed by the University of Southern California

- Foundation for Cross-Connection Control and Hydraulic Research or other entity acceptable to the department are considered approved by the department.
- (e) “*Auxiliary Supply*” means any water source or system other than the public water system, that may be available in the building or on the premises that is either not approved for human consumption by the health agency having jurisdiction or is not otherwise acceptable to the City of Kennewick.
 - (f) “*Backflow*” means the undesirable reversal of flow of water or other substances through a cross-connection into the public water system or consumer's potable water system.
 - (g) “*Backflow Assembly Tester*” means a person holding a valid BAT certificate issued in accordance with Chapter 246-292 WAC.
 - (h) “*Backpressure*” means a pressure (caused by a pump, elevated tank or piping, boiler, or other means) on the consumer's side of the service connection that is greater than the pressure provided by the public water system and which may cause backflow.
 - (i) “*Backsiphonage*” means backflow due to a reduction in system pressure in the City of Kennewick's distribution system and/or consumer's water system.
 - (j) “*Consumer*” means the owner or operator of a water system connected to a public water system through a service connection.
 - (k) “*Consumer's Water System*” means any potable and/or industrial water system that begins at the point of delivery from the public water system and is located on the consumer's premises. The consumer's water system includes all auxiliary sources of supply, storage, treatment, and distribution facilities, piping, plumbing, and fixtures under the control of the consumer.
 - (l) “*Contaminant*” means a substance present in drinking water that may adversely affect the health of the consumer or the aesthetic qualities of the water.
 - (m) “*Cross-Connection*” means any actual or potential physical connection between a public water system or the consumer's water system and any source of nonpotable liquid, solid, or gas that could contaminate the potable water supply by backflow.
 - (n) “*Cross-Connection Control Program*” means the administrative and technical procedures the City of Kennewick implements to protect the public water system from contamination via cross-connections.
 - (o) “*Cross-Connection Control Specialist*” means a person holding a valid CCS certificate issued in accordance with chapter 246-292 WAC.
 - (p) “*Double Check Valve Assembly*” (*DCVA*) means an approved assembly consisting of two independently operating check valves, loaded to the closed position by springs or weights, and installed as a unit with, and between, two resilient seated shutoff valves and having suitable connections for testing.
 - (q) “*High Health Cross-Connection Hazard*” means a cross-connection which could impair the quality of potable water and create an actual public health hazard through poisoning or spread of disease by sewage, industrial liquids, or waste.
 - (r) “*In-Premises Protection*” means a method of protecting the health of consumers served by the consumer's potable water system, located within the property lines of the consumer's premises by the installation of an approved air gap or backflow prevention assembly at the point of hazard, which is generally a plumbing fixture.

- (s) *“Local Administrative Authority”* means the local official, board, department, or agency authorized to administer and enforce the provisions of the Uniform Plumbing Code as adopted under chapter 19.27 RCW.
- (t) *“Low Health Cross-Connection Hazard”* means a cross-connection that could cause an impairment of the quality of potable water to a degree that does not create a hazard to the public health, but does adversely and unreasonably affect the aesthetic qualities of such potable waters for domestic use.
- (u) *“Potable”* means water suitable for drinking by the public.
- (v) *“Premises Isolation”* means a method of protecting a public water system by installation of approved air gaps or approved backflow prevention assemblies at or near the service connection or alternative location acceptable to the City of Kennewick to isolate the consumer's water system from the City of Kennewick's distribution system.
- (w) *“Public Water System”* is defined and referenced under WAC 246-290-020.
- (x) *“Reclaimed Water”* means effluent derived in any part from sewage from a wastewater treatment system that has been adequately and reliably treated, so that as a result of that treatment, it is suitable for beneficial use or a controlled use that would not otherwise occur, and it is no longer considered wastewater.
- (y) *“Reduced Pressure Backflow Assembly” (RPBA)* means an approved assembly consisting of two independently operating check valves, spring loaded to the closed position, separated by a spring loaded differential pressure relief valve loaded to the open position, and installed as a unit with and between two resilient seated shutoff valves and having suitable connections for testing. The assembly must operate to maintain the pressure in the zone between the two check valves, less than the pressure on the public water system side of the device. At cessation of normal flow, the pressure between the check valve must be less than the supply pressure. In case of leakage of either check valve the differential relief valve must operate to maintain the reduced pressure by discharging to the atmosphere . When the inlet pressure drops below two pounds per square inch (13.8 kPa), the relief valve must open to the atmosphere thereby providing an atmospheric zone between the two check valves.
- (z) *“Uniform Plumbing Code”* means the code adopted under RCW 19.27.031(4) and amended under chapter 51-46 WAC. This code establishes state-wide minimum plumbing standards applicable within the property lines of the consumer's premises. (Ord. 3996 Sec. 4, 2001: Ord. 3435 Sec. 1, 1993: Ord. 2490 Sec. 9 (part), 1980: Ord. 2318 Sec. 1 (part), 1979)

15.41.060: Cross-Connections Prohibited:

- (1) Except as provided in Sections 15.41.070 et seq., all cross-connections, whether or not they are controlled by automatic devices such as check valves or by hand-operated mechanisms such as gate valves or stop clocks, are prohibited.
- (2) Failure on the part of persons, firms, or corporations to discontinue the use of all cross-connections and to physically separate cross-connections is sufficient cause for the immediate discontinuance of public water services to the premises. (Ord. 2490 Sec. 9 (part), 1980: Ord. 2318 Sec. 1 (part), 1979)

15.41.070: Installation of Backflow Prevention Assemblies: Backflow prevention assemblies shall be installed at the service connection or within any premises wherein the

judgment of the City of Kennewick certified cross-connection specialist determines that the nature and extent of activity on the premises, or the materials used in connection with the activities, or materials stored on the premises would present an immediate and dangerous hazard to health should a cross-connection occur. Such a determination does not require that a cross-connection exist at the time the backflow prevention assembly is required to be installed. This includes:

- (1) Premises having an auxiliary water supply.
- (2) Premises having internal cross-connections that are not correctable, or intricate plumbing arrangements which make it impractical to ascertain whether or not cross-connections exist.
- (3) Premises where entry is restricted so that inspections for cross-connections cannot be made with sufficient frequency or at sufficient short notice to assure that cross-connections do not exist.
- (4) Premises having a repeated history of cross-connections being established or re-established.
- (5) Premises on which any substance is handled under pressure so as to permit entry into the public water system, or where a cross-connection could reasonably be expected to occur. This includes the handling of process waters, cooling waters, and carbonated beverage systems.
- (6) Premises where materials of a toxic or hazardous nature are handled such that if back siphonage should occur, a serious health hazard may result.
- (7) Premises having a fire sprinkler system.
- (8) Premises having a solar system.
- (9) The following types of facilities, but not limited to:
 - (a) Agricultural (farms and dairies);
 - (b) Beverage bottling plants;
 - (c) Car washes;
 - (d) Chemical plants;
 - (e) Commercial laundries and dry cleaners;
 - (f) Premises where both reclaimed water and potable water are provided;
 - (g) Film processing facilities;
 - (h) Food processing plants;
 - (i) Hospitals, medical centers, nursing homes, veterinary, medical and dental clinics, and blood plasma centers;
 - (j) Premises with separate irrigation systems using the purveyor's water supply and with chemical addition;+
 - (k) Laboratories;
 - (l) Metal plating industries;
 - (m) Mobile cleaning vehicles;
 - (n) Mortuaries;
 - (o) Petroleum processing or storage plants;
 - (p) Piers and docks;
 - (q) Radioactive material processing plants or nuclear reactors;*
 - (r) Survey access denied or restricted;
 - (s) Wastewater lift stations and pumping stations;
 - (t) Wastewater treatment plants;*
 - (u) Premises with an unapproved auxiliary water supply interconnected with the potable water supply;
 - (v) Others specified by the certified cross-connection specialist.

+ *For example, parks, playgrounds, golf courses, cemeteries, estates, etc.*

* RPBA for connections serving these premises are acceptable only when used in combination with an in-plant approved air gap; otherwise, the purveyor shall require an approved air gap at the service connection. (Ord. 3996 Sec. 5, 2001: Ord. 3435 Sec. 1, 1993: Ord. 2681 Sec. 1, (part), 1982: Ord. 2490 Sec. 9 (part) 1980: Ord. 2318 Sec. 1 (part), 1979)

15.41.080: Types of Backflow Prevention Assemblies and Devices Required: The type of prevention assembly or device required by Section 15.41.070 depends on the degree of hazard which exists. In locations where the Cross-Connection Specialist determines that there is a high health cross-connection hazard the appropriate approved backflow preventer shall be one of the following: AG, RPBA, or RPDA. In locations where the Cross-Connection Specialist determines that there is a low health cross-connection hazard, the appropriate approved backflow preventer shall be one of the following: AG, RPBA, RPDA, DCVA, or DCDA. In addition the following requirements shall apply:

(1) All backflow prevention assemblies shall be models included on the current list of backflow prevention assemblies approved for use in Washington State.

(2) Backflow prevention assemblies that can pass testing, but are not currently approved by the department, may be used if the assemblies:

- (a) Were included on the list of approved backflow prevention assemblies at the time of installation;
- (b) Have been properly maintained;
- (c) Are commensurate with the purveyor's assessed degree of hazard; and
- (d) Have been inspected and tested at least annually and have successfully passed the annual tests.

(3) An unlisted backflow prevention assembly will be replaced by an approved assembly commensurate with the degree of hazard, when the unlisted assembly:

- (a) Does not meet the conditions specified in (2)(a) through (2)(d) of this subsection;
 - (b) Is moved; or
 - (c) Cannot be repaired using spare parts from the original manufacturer.
- (4) All AVBs shall meet the definition of approved atmospheric vacuum breakers as described in the definitions of this chapter.

(5) An air-gap separation or reduced pressure backflow assembly shall be installed where the water supply may be contaminated by sewage, industrial waste of a toxic nature or other contaminant which would cause a health or system hazard.

(6) In the case of a substance which may be objectionable but not hazardous to health, a double-check valve assembly, air-gap separation or a reduced pressure backflow assembly shall be installed.

(7) Lawn sprinkler systems, which are supplied by city water only, shall be required to have either a double check valve assembly, one pressure vacuum breaker assembly, or atmospheric vacuum breakers may be installed on each line. The units shall be approved by the Department of Health, as manufactured. Installation shall be as follows:

- (a) Pressure Vacuum Breaker Assembly. The pressure vacuum breaker assembly must be installed at least twelve inches above the highest fixture or point of water usage and in such a manner that drainage will preclude back pressure. The pressure vacuum breaker assembly shall be installed vertically with test

cocks and control valves accessibly located for connection of test equipment. This assembly is not to be installed more than 60 inches high.

- (b) Atmospheric Vacuum Breaker. The atmospheric vacuum breaker (AVB) shall be installed on the discharge side of the last valve on each sprinkler zone. The AVB shall be installed at least six inches above the highest head so at no time will the vacuum breaker be subjected to back pressure or drainage. The AVB shall not be installed where it will be under continuous operating pressure for more than 12 hours in any 24-hour period. The AVB unit shall be installed vertically. (Ord. 3996 Sec. 6, 2001: Ord. 3435 Sec. 3, 1993: Ord. 2700 Sec. 2, 1982: Ord. 2681 Sec. 1 (part), 1982: Ord. 2490 Sec. 9 (part), 1980: Ord. 2318 Sec. 1 (part), 1979)

15.41.090: Location: Backflow prevention assemblies required by this chapter must be installed at the meter, at the property line of the premises when meters are not used, or at a location designated by the City of Kennewick certified cross-connection specialist so as to be readily accessible for maintenance and testing, and where no part of the assembly will be submerged or hidden from proper inspection. (Ord. 3435 Sec. 4, 1993: Ord. 2681 Sec. 1, (part), 1982: Ord. 2490 Sec. 9 (part), 1980: Ord. 2318 Sec. 1 (part), 1979)

15.41.100: Installation: The installation of backflow prevention assemblies required by this chapter shall be subject to inspection by the City of Kennewick Cross Connection Specialist. All backflow prevention devices shall be installed in the orientation for which they are approved. Bypass piping installed around any approved backflow preventer shall be equipped with an approved backflow preventer that affords at least the same level of protection as the approved backflow preventer bypassed. It will be the responsibility of the customer or contractor to notify the City of Kennewick Cross-Connection Specialist 48 hours in advance of any new installation or relocation of a backflow prevention assembly or device. (Ord. 3996 Sec. 7, 2001: Ord. 3435 Sec. 5, 1993: Ord. 2735 Sec. 1, 1983: Ord. 2490 Sec. 9 (part), 1980: Ord. 2318 Sec. 1 (part), 1979)

15.41.110: Acceptable Types: Any protective assembly or device required by this chapter shall be a model approved by the Director of Public Works or his/her designated representative. A double check valve assembly or a reduced pressure backflow assembly, or a pressure vacuum breaker assembly will be approved if it has successfully passed performance tests of the University of Southern California, Foundation for Cross-Connection Control and Hydraulic Research, and has been approved by Washington State Department of Health and otherwise meets standards acceptable to the Director of Public Works. (Ord. 3996 Sec. 8, 2001: Ord. 3435 Sec. 6, 1993: Ord. 2735 Sec. 1, 1983: Ord. 2490 Sec. 9 (part), 1980: Ord. 2318 Sec. 1 (part), 1979)

15.41.115: Identification of Piping Systems: Where potable water, non-potable water, chemical feed systems, gas lines, etc. co-exist in an industrial, commercial or residential facility, labeling in accordance with American National Standards A13.1 shall be required to ensure proper identification of each line. (Ord. 3435 Sec. 7, 1993)

15.41.120: Inspection and Testing Requirements:

- (1) New service connections shall undergo an initial evaluation by a City of Kennewick Cross-Connection Specialist, who will determine the degree of hazard posed by

the premise and the appropriate backflow prevention assembly for the premise. The Cross-connection specialist shall designate a location for the backflow prevention assembly.

(2) The City of Kennewick cross-connect specialist will, at no charge to the customer, inspect and test the backflow prevention assembly or device upon installation. Thereafter, it will be the customer's responsibility to have the backflow prevention assembly or device tested and, if necessary, repaired on an annual basis by a Washington State Certified Tester.

(3) The City will notify the customer in writing 60 days prior to the test dead line. The customer will then provide evidence in writing that the backflow assembly or device meets all requirements prior to the test dead line. It may be required to test the backflow prevention assembly or device more often when successive inspections indicate failure.

(4) Any person testing or repairing backflow prevention assemblies or devices must be currently certified as a Backflow Assembly Tester by the State of Washington Department of Health. (Ord. 3996 Sec. 9, 2001; Ord. 3435 Sec. 8, 1994; Ord. 2700 Sec. 3, 1982; Ord. 2681 Sec. 1 (part), 1982; Ord. 2490 Sec. 9 (part), 1980; Ord. 2318 Sec. 1 (part), 1979)

15.41.130: Termination of Services: The failure of the customer to cooperate in the installation, maintenance, testing or inspection of backflow prevention assemblies or devices required by this chapter is grounds for termination of water services to the premises or requiring air gap separation. (Ord. 3435 Sec. 9, 1993; Ord. 2490 Sec. 9 (part), 1980; Ord. 2318 Sec. 1 (part), 1979)

15.41.140: Penalties: It is unlawful for any person, firm, or corporation to violate any provision of this chapter or fail to comply with any provision thereof. A violation of this chapter is a misdemeanor unless otherwise provided. A violation of any provision hereof is a continuing violation. (Ord. 3435 Sec. 10, 1993)