

Chapter 3745-95 Backflow Prevention and Cross-Connection Control

3745-95-01 Definitions.

As used in this chapter of the Administrative Code:

(A) "Air gap separation" 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 receptacle.

(B) "Approved" means that a backflow prevention device or method has been accepted by the supplier of water and the director as suitable for the proposed use.

(C) "Auxiliary water system" means any water system on or available to the premises other than the public water system. These auxiliary water systems shall include used water or water from a source other than the public water system, such as wells, cisterns or open reservoirs that are equipped with pumps or other prime movers, including gravity.

(D) "Backflow" means the flow of water or other liquids, mixtures, or substances into the distributing pipes of a potable water supply from any source other than the intended source of the potable water supply.

(E) "Backflow prevention device" means any device, method, or type of construction intended to prevent backflow into a potable water system.

(F) "Booster pump" means any device which is intended to increase the in-line water pressure.

(G) "Consumer" means the owner or person in control of any premises supplied by or in any manner connected to a public water system.

(H) "Consumer's water system" means any water system, located on the consumer's premises, supplied by or in any manner connected to a public water system. A household plumbing system is considered to be a consumer's water system.

(I) "Cross-connection" means any arrangement whereby backflow can occur.

(J) "Degree of hazard" is a term derived from an evaluation of the potential risk to health and welfare.

(K) "Director" means the director of environmental protection or his duly authorized representative.

(L) "Double check valve assembly" means an assembly composed of two single, independently acting, check valves including tightly closing shutoff valves located at each end of the assembly and suitable connections for testing the watertightness of each check valve.

(M) "Double check-detector check valve assembly" means a specially designed assembly composed of a line-size approved double check valve assembly with a specific bypass water meter and a meter-sized approved double check valve assembly. The meter shall register accurately for only very low rates of flow and shall show a registration for all rates of flow.

(N) "Health hazard" means any condition, device, or practice in a water system or its operation that creates, or may create, a danger to the health of users.

(O) "Human consumption" means the ingestion or absorption of water or water vapor as the result of drinking, cooking, dishwashing, hand washing, bathing, showering, or oral hygiene.

(P) "Interchangeable connection" means an arrangement or device that will allow alternate but not simultaneous use of two sources of water and includes an approved reduced pressure principle backflow prevention assembly or an approved reduced pressure principle-detector assembly on the public water system side of the connection..

(Q) "Person" means the state, any political subdivision, public or private corporation, individual, partnership, or other legal entity.

(R) "Pollutional hazard" means a condition through which an aesthetically objectionable or degrading material, which is not dangerous to the public water system or health of users, may enter the public water system or portion of a consumer's water system.

(S) "Potable water" means water intended for human consumption.

(T) "Premises" means any building, structure, dwelling or area containing plumbing or piping supplied from a public water system.

(U) "Process fluids" 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 pollutional, system, health or severe health hazard if introduced into the public water system or portion of a consumer's water system. This includes, but is not limited to:

(1) Polluted or contaminated waters;

(2) Process waters;

(3) Used waters originating from a public water system which may have deteriorated in sanitary quality;

(4) Cooling waters;

(5) Contaminated natural waters taken from wells, lakes, streams, or irrigation systems;

(6) Chemicals in solution or suspension;

(7) Oils, gases, acids, alkalis, and other liquid and gaseous fluids used in industrial or other processes, or for fire fighting purposes.

(V) "Public water system" has the same meaning as in rule 3745-81-01 of the Administrative Code.

(W) "Reduced pressure principle backflow prevention assembly" 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. 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.

(X) "Reduced pressure principle-detector assembly" means a specially designed assembly composed of a line-size approved reduced pressure principle backflow prevention assembly with a specific bypass water meter and a meter sized approved reduced pressure principle backflow prevention assembly. The meter shall register accurately for only very low rates of flow and shall show a registration for all rates of flows.

(Y) "Service connection" means the terminal end of a service line from the public water system. If a meter is installed at the end of the service, then the service connection means the downstream end of the meter.

(Z) "Severe health hazard" means a health hazard to users that could reasonably be expected to result in significant morbidity or death.

(AA) "Supplier of water" means the owner or operator of a public water system.

(BB) "System hazard" means a condition posing an actual or potential threat of damage to the physical properties of the public water system or a consumer's water system.

(CC) "Used water" means any water supplied by a supplier of water from a public water system to a consumer's water system after it has passed through the service connection and is no longer under the control of the supplier.

(DD) "Water system" means a system for the provision of piped water or process fluids, and includes any collection, treatment, storage or distribution facilities used primarily in connection with such system.

(EE) "Weep holes" means a series of small diameter holes located in the wall of the supply pipe for a yard hydrant that allow for drainage of accumulated water from the delivery piping. These holes are usually part of a plunger and valve system that seals off the holes during water usage and opens the holes during shutdown. These openings are located below ground level and below the frost line in areas where the threat of freezing exists

(FF) "Yard hydrant" means a device that is located outside of a building, equipped with a valved mechanism that controls the delivery of potable water, and is not designed to supply a fire department pumper.

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Statutory Authority: RC Section 6109.04

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Prior Effective Dates: 7/1/72, 11/26/80, 5/1/03

3745-95-02 Cross-connections.

(A) No person shall install or maintain a water service connection to any premises where actual or potential cross-connections to a public water system or a consumer's water system may exist unless such actual or potential cross-connections are abated or controlled to the satisfaction of the supplier of water.

(B) No person shall install or maintain a connection between a public water system or consumer's water system and an auxiliary water system unless the auxiliary water system, the method of connection and the use of such system have been approved by the supplier of water and by the director as required by section 6109.13 of the Revised Code.

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Rule Amplifies: 6109.01, 6109.03, 6109.04, 6109.13

Prior Effective Dates: 07/01/72, 11/26/80

3745-95-03 Surveys and investigations.

(A) The supplier of water shall conduct or cause to be conducted periodic surveys and investigations, of frequency acceptable to the director, of water use practices within a consumer's premises to determine whether there are actual or potential cross-connections to the consumer's water system through which contaminants or pollutants could backflow into the public water system.

(B) The supplier of water, or his authorized representative, shall have the right to enter premises served by the public water system at all reasonable times for the purpose of making surveys and investigations of water use practices within the premises.

(C) On request by the supplier of water, or his authorized representative, the consumer shall furnish the supplier, or his authorized representative, information on water use practices within the consumer's premises.

(D) Paragraph (A) of this rule does not relieve the consumer of the responsibility for conducting, or causing to be conducted, periodic surveys of water use practices on his premises to determine whether there are actual or potential cross-connections in the consumer's water system through which contaminants or pollutants could backflow into a public water system or a potable consumer's water system.

Effective: 11/26/1980

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Prior Effective Dates: 07/01/72, 11/26/80

3745-95-04 Where protection is required.

(A) An approved backflow prevention device shall be installed on each service line to a consumer's water system serving premises, where in the judgment of the supplier of water or the director, a pollutional, system, health or severe health hazard to the public water system exists.

(B) An approved backflow prevention device shall be installed on each service line to a consumer's water system serving premises where any of the following conditions exist:

(1) Premises having an auxiliary water system on the premises, unless such auxiliary system is accepted as an additional source by the supplier of water and the source is approved by the director;

(2) Premises on which any substance is handled in such a fashion as to create an actual or potential hazard to a public water system. This shall include premises having sources or systems containing process fluids

(3) Premises having internal cross-connections that, in the judgment of the supplier of water, are not correctable, or intricate plumbing arrangements which make it impracticable 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; or

(6) Others specified by the director.

(C) The following requirements apply to premises that have an auxiliary water system on the real property that is owned or under control of the consumer and adjacent to the premises.

- (1) A physical separation shall be maintained between the public water system or a consumer's water system and the auxiliary water system as required by paragraph (B) of rule 3745-95-02 of the Administrative Code; and
- (2) An approved backflow prevention device shall be installed on each service connection serving the consumer's water system, unless the supplier of water does all of the following:
 - (a) Determines, on a case-by-case basis, that the installation of an approved backflow prevention device on a service connection is not required in consideration of factors including, but not limited to, the past history of cross connections being established or re-established on the premises, the ease or difficulty of connecting the auxiliary water system with the public water system on the premises, the presence or absence of contaminants on the property or other risk factors;
 - (b) Requires the consumer to sign an agreement which specifies the penalties, including those set forth in rule 3745-95-08 of the Administrative Code, for creating a connection between the public water system and the auxiliary water system;
 - (c) Conducts or causes to be conducted an inspection at least every twelve months to certify that no connection or means of connection has been created between the public water system and the auxiliary water system;
 - (d) Maintains an inventory of each consumer's premises where an auxiliary water system is on or available to the premises, or on the real property adjacent to the premises; and
 - (e) Develops and implements an education program to inform all consumers served by the public water system about the dangers of cross-connections and how to eliminate cross-connections.
- (D) 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 director determines that no severe health, health, system or pollutional hazard to the public water system exists:
 - (1) Hospitals, mortuaries, clinics, nursing homes;
 - (2) Laboratories;
 - (3) Piers, docks, waterfront facilities;
 - (4) Sewage treatment plants, 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; and
 - (11) Others specified by the director.
- (E) An approved backflow prevention device shall be installed at any point of connection that is approved in accordance with paragraph (B) of rule 3745-95-02 of the Administrative Code between a public water system or a consumer's water system and an auxiliary water system, unless such auxiliary system is accepted as an additional source by the supplier of water and the source is approved by the director.

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3745-95-05 Type of protection required.

(A) The type of protection required under paragraphs (A), (B), (C) and (D) of rule 3745-95-04 of the Administrative Code shall depend on the degree of hazard which exists as follows:

(1) An approved air gap separation shall be installed where a public water system may be contaminated with substances that could cause a severe health hazard;

(2) An approved air gap separation, an approved reduced pressure principle backflow prevention assembly or an approved reduced pressure detector check assembly shall be installed where a public water system may be contaminated with any substance that could cause a system or health hazard;

(3) An approved air gap separation, an approved reduced pressure principle backflow prevention assembly, an approved reduced pressure principle-detector check assembly, an approved double check valve assembly or an approved double check-detector check valve assembly shall be installed where a public water system may be contaminated with any substance that could cause a pollutional hazard.

(B) The type of protection required under paragraph (E) of rule 3745-95-04 of the Administrative Code shall be an approved air gap separation or an approved interchangeable connection.

(C) Where an auxiliary water system is used as a secondary source of water for a fire protection system, the provisions of paragraph (B) of this rule for an approved air gap separation or an approved interchangeable connection may be waived by the director, provided:

(1) At premises where the auxiliary water system may be contaminated with substances that could cause a system, health or severe health hazard, a public water system or a consumer's water system shall be protected against backflow by installation of an approved reduced pressure principle backflow prevention assembly or an approved reduced pressure principle-detector check assembly;

(2) At all other premises, a public water system or a consumer's water system shall be protected against backflow by installation of an approved reduced pressure principle backflow prevention assembly, an approved reduced pressure principle-detector check assembly, an approved double check valve assembly or an approved double check-detector check valve assembly;

(3) A public water system or a consumer's water system shall be the primary source of water for the fire protection system;

(4) The fire protection system shall be normally filled with water from a public water system or a consumer's water system; and

(5) The water in the fire protection system shall be used for fire protection only, with no other use of water from the fire protection system downstream from the approved backflow prevention device.

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3745-95-06 Backflow prevention devices.

(A) Any backflow prevention device required by rules 3745-95-04 and 3745-95-05 of the Administrative Code shall be of a model or construction approved by the supplier of water and conform to at least one of the following standards:

(1) For air gap separations: American national standards institute standard A 112.1.2 – 1991;

(2) For reduced pressure principle backflow prevention assemblies: American national standards institute/American water works association standard C511-97 (1997), or American society of sanitary engineering standard 1013-99 (1999), or Canadian standards association standard B 64.4 -01 (2001), or foundation for cross connection control and hydraulic research, university of Southern California specifications of backflow assemblies for reduced pressure principle assemblies – ninth edition (1993);

(3) For double check valve assemblies: American national standards institute/American water works association standard C510-97 (1997), or American society of sanitary engineering standard 1015-99, or Canadian standards association standard B 64.5 -01 (2001), or foundation for cross connection control and hydraulic research, university of Southern California specifications of backflow assemblies for double check valve assemblies – ninth edition (1993);

(4) For reduced pressure principle-detector assemblies: American national standards institute/American society of sanitary engineering standard 1047-99 (1999), or Canadian standards association standard B 64.4.1-01 (2001), or foundation for cross connection control and hydraulic research, university of Southern California specifications of backflow assemblies for reduced pressure principle-detector assemblies – ninth edition (1993); or

(5) For double check-detector check valve assemblies: American national standards institute/American society of sanitary engineering standard 1048-99 (1999), or Canadian standards association standard B 64.5.1-01 (2001), or foundation for cross connection control and hydraulic research, university of Southern California specifications of backflow assemblies for double check-detector assemblies – ninth edition (1993).

(B) Any backflow prevention device required by rules 3745-95-04 and 3745-95-05 of the Administrative Code shall be installed at a location and in a manner approved by the supplier of water and shall be installed at the expense of the water consumer. In addition, any backflow prevention device required by paragraphs (B) and (C) of rule 3745-95-05 of the Administrative Code shall be installed at a location and in a manner approved by the director as required by section 6109.13 of the Revised Code.

(C) It shall be the duty of the water consumer to maintain any backflow prevention device required by rules 3745-95-04 and 3745-95-05 of the Administrative Code in proper working order and in continuous operation.

(1) The supplier of water shall retain authority over any backflow prevention device required by rules 3745-95-04 and 3745-95-05 of the Administrative Code.

(2) It shall be the duty of the supplier of water to see that the tests and inspections required under this paragraph are made.

(3) The consumer shall, on any premises on which backflow prevention devices required by rules 3745-95-04 and 3745-95-05 of the Administrative Code are installed, have thorough inspections and operational tests made of the devices at the time of installation or repair, and as may be reasonably required by the supplier of water or the director, but in all cases at least once every twelve months. These inspections and tests shall be at the expense of the water consumer and shall be performed by the supplier of water or a person approved by the supplier as qualified to inspect and test backflow prevention device.

(4) These devices shall be repaired, overhauled or replaced at the expense of the consumer whenever they are found to be defective.

(5) Records of such inspections, tests, repairs and overhaul shall be kept by the consumer and made available to the supplier of water.

(D) The supplier of water shall inspect or cause to be inspected all installations where an approved connection exists between an auxiliary water system and the public water system or a consumer's water system at least once every twelve months and shall maintain an inventory of all such installations and inspection records. Such inventories and inspection records shall be made available during sanitary surveys and at other reasonable times.

(E) Backflow prevention devices approved by the supplier of water and conforming to prior or subsequent editions of the standards cited in paragraph (A) of this rule, and which are properly maintained in accordance with paragraph (C) of this rule shall be excluded from the requirements of paragraphs (A) and (B) of this rule if the supplier of water and the director are assured that the devices will satisfactorily protect the public water system.

[Comment: This rule incorporates the following standard by reference: American national standards institute standard A 112.1.2 – 1991, air gaps in plumbing systems R(1991). At the effective date of this rule, a copy may be obtained from global engineering documents, 15 Inverness Way East, Englewood, CO 80112, phone: 303-397-7956 or 800-854-7179, world-wide web address: <http://global.ihs.com/>. This document is available for review at Ohio EPA, Lazarus government center, 122 South Front Street, Columbus, OH, 43215-3425.]

[Comment: This rule incorporates the following standards by reference: American national standards institute/American water works association standard C510-97 and American national standards institute/American water works association standard C511-97. At the effective date of this rule, a copy of these documents may be obtained from AWWA, 6666 W. Quincy Ave., Denver, CO, 80235, phone: 800-926-7337, world-wide web address: <http://www.awwa.org/> or from global engineering documents, 15 Inverness Way East, Englewood, CO 80112, phone: 303-397-7956 or 800-854-7179, world-wide web address: <http://global.ihs.com/>. These documents are available for review at Ohio EPA, Lazarus government center, 122 South Front Street, Columbus, OH, 43215-3425]

[Comment: This rule incorporates the following standards by reference: American society of sanitary engineering standard 1013-99, American society of sanitary engineering standard 1015-99, American national standards institute/American society of sanitary engineering standard 1047-99, and American national standards institute/American society of sanitary engineering standard 1048-99. At the effective date of this rule, a copy these documents may be obtained from American society of sanitary engineering, 901 Canterbury Road, Suite A, Westlake, OH, 44145-1480, phone: 440-835-3040, world-wide web address: <http://www.asse-plumbing.org/> or from global engineering documents, 15 Inverness Way East, Englewood, CO, 80112, phone: 303-397-7956 or 800-854-7179, world-wide web address: <http://global.ihs.com/>. These documents are available for review at Ohio EPA, Lazarus government center, 122 South Front Street, Columbus, OH, 43215-3425]

[Comment: This rule incorporates the following standards by reference: Canadian standards association standard B 64.4 -01, Canadian standards association standard B 64.5 -01, Canadian standards association standard B 64.4.1-01 and Canadian standards association standard B 64.5.1-01. At the effective date of this rule, a copy of these documents may be obtained as "B64 Series-01: Backflow Preventers and Vacuum Breakers" from Canadian Standards Association, 5060 Spectrum Way, Suite 100, Mississauga, Ontario, L4W 5N6, Canada, world-wide web address:

<http://www.csa.ca/default.asp?language=english>. These documents are available for review at Ohio EPA, Lazarus government center, 122 South Front Street, Columbus, OH, 43215-3425]

[Comment: This rule incorporates portions of the following manual by reference: The manual of cross-connection control, Ninth Edition, published by the foundation for cross connections control and hydraulic research, university of Southern California. At the effective date of this rule, a copy of this document may be obtained from the foundation for cross connection control and hydraulic research, university of Southern California, Kaprielian hall 200, Los Angeles, CA 90089-2531, phone: 213-740-2032, world-wide web address: <http://www.usc.edu/dept/fccchr/>. This document is available for review at Ohio EPA, Lazarus government center, 122 South Front Street, Columbus, OH 43215-3425]

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3745-95-07 Booster pumps.

(A) No person shall install or maintain a water service connection to any one, two or three family dwelling where a booster pump has been installed, unless an air gap separation is provided to ensure that the booster pump cannot exert suction on the service line.

(B) For booster pumps not intended to be used for fire suppression, no person shall install or maintain a water service connection to any premises not included in paragraph (A) of this rule where a booster pump has been installed on the service line to or within such premises, unless such booster pump is equipped with a low pressure cut-off designed to shut-off the booster pump when the pressure in the service line on the suction side of the pump drops to ten pounds per square inch gauge or less.

(C) For booster pumps used for fire suppression installed after the effective date of this rule, no person shall install or maintain a water service connection to any premises not included in paragraph (A) of this rule where a booster pump has been installed on the service line to or within such premises, unless the pump is equipped with a minimum pressure sustaining valve on the booster pump discharge, which throttles the discharge of the pump when necessary so that suction pressure will not be reduced below ten pounds per square inch gauge while the pump is operating.

(D) For booster pumps used for fire suppression installed prior to the effective date of this rule, no person shall maintain a water service connection to any premises not included in paragraph (A) of this rule where a booster pump has been installed on the service line to or within such premises, unless the pump is equipped with either a low pressure cut-off designed to shut-off the booster pump when the pressure in the service line on the suction side of the pump drops to ten pounds per square inch gauge or less, or a minimum pressure sustaining valve on the booster pump discharge, which throttles the discharge of the pump when necessary so that suction pressure will not be reduced below ten pounds per square inch gauge while the pump is operating.

(E) It shall be the duty of the water consumer to maintain the low pressure cut-off device or minimum pressure sustaining valve in proper working order and to certify to the supplier of water, at least once every twelve months, that the device is operable and maintained in continuous operation.

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Rule Amplifies: 6109.03, 6109.04, 6109.13

Prior Effective Dates: 7/1/72, 11/26/80, 5/1/03

3745-95-08 Violations.

(A) The supplier of water shall deny or discontinue, after reasonable notice to the occupant thereof, the water service to any premises wherein any backflow prevention device required by this chapter is not installed, tested and maintained in a manner acceptable to the supplier of water, or if it is found that the backflow prevention device has been removed or by-passed, or if an unprotected cross-connection exists on the premises or if a low pressure cut-off required by rule 3745-95-07 of the Administrative Code is not installed and maintained in working order, or if the supplier of water or the director, or the authorized representative of either, is denied entry to determine compliance with this chapter of the Administrative Code.

(B) Water service to such premises shall not be restored until the consumer has corrected or eliminated such conditions or defects in conformance with this chapter of the Administrative Code, and to the satisfaction of the supplier of water.

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Rule Amplifies: 6109.01, 6109.03, 6109.04, 6109.13

Prior Effective Dates: 07/01/72

3745-95-09 Requirements for yard hydrants.

(A) Yard hydrants with weep holes are prohibited.

(B) Sanitary yard hydrants that do not have weep holes, such as those that meet the requirements of the "American Society of Sanitary Engineers (ASSE) standard 1057, Performance Requirements for Freeze Resistant Yard Hydrants with Backflow Protection"(2001), are not prohibited provided:

(1) The device is acceptable to the public water system to which it will be connected; and

(2) All of the backflow and cross-connection requirements of this chapter of the Administrative Code are met.

Replaces: Former 3745-99-01

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