

Virginia Administrative Code

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Article 4

Cross Connection Control and Backflow Prevention in Waterworks

12VAC5-590-580. General.

The purpose of this article is to require as a condition for the issuance and continued use of the operation permit for the waterworks that each owner of a waterworks establish and enforce a program of cross connection control and backflow prevention for each waterworks. The cross connection control and backflow prevention program shall be approved by the division prior to issuance of the operation permit (see Appendix I).

Statutory Authority

§§ 32.1-12 and 32.1-170 of the Code of Virginia.

Historical Notes

Derived from VR355-18-006.01 § 2.25, eff. August 1, 1991; amended, Virginia Register Volume 9, Issue 17, eff. June 23, 1993.

12VAC5-590-590. Cross connections.

A. The purveyor shall not install, maintain, or allow to be installed a water service connection to any premises where cross connections to a waterworks or a consumer's water system may exist unless such cross connections are abated or controlled to the satisfaction of the water purveyor or the division.

B. The purveyor shall not install, maintain, or allow to be installed any connection whereby water from an auxiliary water system may enter a waterworks or consumer's water system unless the auxiliary water system and the method of connection and use of such system shall have been approved by the water purveyor and by the division.

Statutory Authority

§§ 32.1-12 and 32.1-170 of the Code of Virginia.

Historical Notes

Derived from VR355-18-006.02 § 2.26, eff. June 23, 1993.

12VAC5-590-600. Responsibilities.

A. General. Effective cross connection control requires the cooperation of the water purveyor, the building official, the consumer, the Virginia Department of Health, and the backflow prevention device tester.

B. Water purveyor.

1. The purveyor shall establish or cause to be established and operate a cross connection control and backflow prevention program consistent with the extent of the system and the type of consumer served. This program shall include at least one designated individual who shall be responsible for the inspection of the waterworks for cross connection and backflow prevention control. This program shall be carried out in accordance with the Uniform Statewide Building Code and shall be a continuing program.
2. Suggested elements of this program are contained in Appendix I. The purveyor has full responsibility for water quality and for the construction, maintenance, and operation of the waterworks beginning at the water source and ending at the service connection.
3. The purveyor shall have thorough inspections and operational tests made at least annually of backflow prevention devices which are required and installed at the service connection.
4. In the event of backflow of pollution or contamination into the waterworks, the purveyor shall promptly take or cause corrective action to confine and eliminate the pollution or contamination. The purveyor shall immediately notify the division when backflow occurs.
5. The purveyor shall take positive action to ensure that the waterworks is adequately protected at all times. If a cross connection exists or backflow occurs into a consumer's water system or if the pressure in the waterworks is lowered below 10 psi gauge, the purveyor may discontinue the water service to the consumer and water service shall not be restored until the deficiencies have been corrected or eliminated to the satisfaction of the purveyor.

Statutory Authority

§§ 32.1-12 and 32.1-170 of the Code of Virginia.

Historical Notes

Derived from VR355-18-006.03 § 2.27, eff. August 1, 1991; amended, Virginia Register Volume 9, Issue 17, eff. June 23, 1993.

12VAC5-590-610. Containment policy.

A. An approved backflow prevention device shall be installed at each service connection to a consumer's water system where, in the judgment of the water purveyor or the division, a health, pollution, or system hazard to the waterworks exists.

B. When, as a matter of practicality, the backflow prevention device cannot be installed at the service connection, the device may be located downstream of the service connection but prior to any unprotected takeoffs.

C. A backflow prevention device shall be installed at each service connection to a consumer's water system serving premises where the following conditions exist:

1. Premises on which any substance is handled in such a manner as to create an actual or potential hazard to a waterworks (this shall include premises having sources or systems containing process fluids or waters originating from a waterworks which are no longer under the control of the water purveyor);
2. Premises having internal cross connections that, in the judgment of the water purveyor or the division, may not be easily correctable or have intricate plumbing arrangements which make it impracticable to determine whether or not cross connections exist;
3. Premises where, because of security requirements or other prohibitions or restrictions, it is impossible or impractical to make a complete cross connection survey;
4. Premises having a repeated history of cross connections being established or reestablished;
5. Premises having fire protection systems utilizing combinations of sprinklers, fire loops, storage tanks, pumps, antifreeze protection, or auxiliary water sources including siamese connections (fire loops and sprinkler systems with openings not subject to flooding, and containing no antifreeze or other chemicals, no separate fire protection storage, or auxiliary sources, will not normally require backflow prevention); and
6. Other premises specified by the division or the purveyor when cause can be shown that a potential cross connection hazard not enumerated above exists.

D. Premises having booster pumps connected to the waterworks shall be equipped with a low pressure regulating or cutoff device to shut off the booster pump when the pressure in the waterworks drops to a minimum of 10 psi gauge.

E. An approved backflow prevention device shall be installed at each service connection to a consumer's water system serving, but not necessarily limited to, the following types of facilities:

1. Hospitals, mortuaries, clinics, veterinary establishments, nursing homes, and medical buildings;
2. Laboratories;
3. Piers, docks, and waterfront facilities;
4. Sewage treatment plants, sewage pumping stations, or storm water pumping stations;
5. Food and beverage processing plants;
6. Chemical plants, dyeing plants and pharmaceutical plants;
7. Metal plating industries;

8. Petroleum or natural gas processing or storage plants;
9. Radioactive materials processing plants or nuclear reactors;
10. Car washes and laundries;
11. Lawn sprinkler systems, and irrigation systems;
12. Fire service systems;
13. Slaughter houses and poultry processing plants;
14. Farms where the water is used for other than household purposes;
15. Commercial greenhouses and nurseries;
16. Health clubs with swimming pools, therapeutic baths, hot tubs, or saunas;
17. Paper and paper products plants and printing plants;
18. Pesticide or exterminating companies and their vehicles with storage or mixing tanks;
19. Schools or colleges with laboratory facilities;
20. Highrise buildings (four or more stories);
21. Multiuse commercial, office, or warehouse facilities; and
22. Others specified by the purveyor or the division when reasonable cause can be shown for a potential backflow or cross connection hazard.

Statutory Authority

§§ 32.1-12 and 32.1-170 of the Code of Virginia.

Historical Notes

Derived from VR355-18-006.04 § 2.28, eff. August 1, 1991; amended, Virginia Register Volume 9, Issue 17, eff. June 23, 1993.

12VAC5-590-620. Type of protection required.

The type of protection required shall depend on the degree of hazard which exists or may exist and on the method of potential backflow. Backflow occurs either by back pressure or by back siphonage.

The degree of hazard, either high, moderate, or low, is based on the nature of the contaminant; the potential of the health hazard; the probability of the backflow occurrence; and the effect on waterworks structures, equipment, and appurtenances used in the storage, collection, purification, treatment, and distribution of pure water.

Table 2.10 shall be used as a guide to determine the degree of hazard for any situation.

A. Air gaps give the highest degree of protection and shall be used whenever practical to do so in high

hazard situations subject to back pressure.

B. An air gap separation and a reduced pressure principle backflow prevention device will protect against back pressure when operating properly. Vacuum breakers will not protect against back pressure, but will protect against back-siphonage when operating properly.

C. Backflow prevention devices consisting of dual independent check valves with or without an intermediate atmospheric vent shall only be used in low hazard situations.

D. Barometric loops are not acceptable.

E. An interchangeable connection or change-over device has limitations which prevent its use where back pressure is present or may occur, the auxiliary supply is not an approved source, or the waterworks line pressure is less than 20 psi. Since this type connection is one of the easiest to bypass, the use of this type device will be approved only as a temporary and continuously supervised arrangement. In most instances, an approved device or method must be included and approved by the purveyor and division.

F. Reduced pressure principle type backflow preventers shall not be installed in pits or areas subject to flooding.

Statutory Authority

§§ 32.1-12 and 32.1-170 of the Code of Virginia.

Historical Notes

Derived from VR355-18-006.05 § 2.29, eff. August 1, 1991; amended, Virginia Register Volume 9, Issue 17, eff. June 23, 1993.

12VAC5-590-630. Backflow prevention devices.

A. Any backflow prevention device shall be of the approved type and shall comply with the Uniform Statewide Building Code.

B. Any backflow prevention device shall be installed in a manner approved by the water purveyor and in accordance with the Uniform Statewide Building Code.

C. Existing backflow prevention devices approved by the purveyor and the division prior to the effective date of this chapter shall, except for inspection, testing, and maintenance requirements, be excluded from the requirements of 12VAC5-590-600 A and B if the water purveyor and the division are assured that the devices will protect the waterworks.

TABLE 2.10. DETERMINATION OF DEGREE OF HAZARD	
Premises with one or more of the following conditions shall be rated at the corresponding degree of hazard.	
High Hazard	- The contaminant would be toxic, poisonous, noxious or unhealthy.

	- A health hazard would exist.
	- A high probability exists of a backflow occurrence either by back pressure or by back siphonage.
	- The contaminant would disrupt the service of piped water for drinking or domestic use.
	- Examples - sewage, used water, nonpotable water, auxiliary water systems, toxic or hazardous chemicals, etc.
Moderate Hazard	- The contaminant would only degrade the quality of the water aesthetically or impair the usefulness of the water.
	- A health hazard would not exist.
	- A moderate probability exists of a backflow occurrence either by back pressure or by back siphonage.
	- The contaminant would not seriously disrupt service of piped water for drinking or domestic use.
	- Examples - Food stuff, nontoxic chemicals, nonhazardous chemicals, etc.
Low Hazard	- The contaminant would only degrade the quality of the water aesthetically.
	- A health hazard would not exist.
	- A low probability exists of the occurrence of backflow primarily by back siphonage.
	- The contaminant would not disrupt service of piped water.
	- Examples - food stuff, nontoxic chemicals, nonhazardous, chemicals, etc.

Statutory Authority

§§ 32.1-12 and 32.1-170 of the Code of Virginia.

Historical Notes

Derived from VR355-18-006.06 § 2.30, eff. August 1, 1991; amended, Virginia Register Volume 9, Issue 17, eff. June 23, 1993.