

DEPARTMENT OF HEALTH SERVICES

Fire Sprinkler Regulations

Section 1. Section 19-13-B37 of the Regulations of Connecticut State Agencies is amended to read as follows:

Sec. 19-13-B37. Cross connections between water supplies prohibited

(a) No physical connection between the distribution system of a public potable water supply and that of any other water supply shall be permitted, unless such other water supply is of safe sanitary quality and the interconnection of both supplies is approved by the State Department of Health Services. No officer, board, corporation or other person or group of persons, owning or having the management or control of any potable water supply furnished to any municipality or water district, shall supply water to any person, firm or corporation who maintains such connection.

(b) Effective December 31, 1989, the State Department of Health Services shall prohibit the use of double check valve assemblies except those assemblies allowed pursuant to section 19-13-B38a (c) (2) (1) of the Regulations of Connecticut State Agencies.

Section 2. Section 19-13-B38a of the Regulations of Connecticut State Agencies is amended to read as follows:

Sec. 19-13-B38a. Permissible arrangements for connections to public water supply lines

(a) Definitions. As used in this section:

(1) "Air gap" means the unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or outlet supplying water to a tank plumbing fixture, or other device, and the flood level rim of the receptacle. The vertical physical separation shall be at least two times the inside diameter of the water inlet pipe above the flood rim level but shall not be less than one inch.

(2) "Air vent type backflow preventer" means a device containing two independently operating check valves separated by a chamber which can automatically vent to the atmosphere if backflow occurs.

(3) "Atmospheric vacuum breaker" means a mechanical device which automatically airvents a pipeline to prevent backsiphonage.

(4) "Auxiliary source" means (A) a water supply which is not approved for potable use such as a pond, river, open storage tank or large swimming pool; (B) potable water which has become unpotable such as by the addition of chemicals or from contamination while the water is being stored or held in reserve.

(5) "Double check valve assembly" (DCVA) means a device which contains two independently acting check valves located between two tightly closing shut-off valves and fitted with properly located test cocks. This device is installed on existing fire sprinkler systems pursuant to section 19-13-B38a (c) (2) (1) of the Regulations of Connecticut State Agencies.

(6) "Existing fire sprinkler system" means a sprinkler system installed prior to October 1, 1992 and not having undergone substantial renovations, alterations or additions representing more than 50% of the replacement cost of the existing system at the time of renovation, alteration or addition after July 1, 1993.

(7) "Fire sprinkler system" for fire protection purposes means an integrated system of underground and overhead piping designed to provide fire protection for a building or structure. The installation includes one or more automatic water supplies. The portion of the sprinkler system above-ground is a network of specially sized or hydraulically designed piping installed in a building, structure, or area generally overhead, and to which sprinklers are attached in a systematic pattern. The valve controlling each system riser is located in the sprinkler riser or its supply piping. Each sprinkler system riser includes a device for actuating an alarm when the system is in operation. The system is usually activated by heat from a fire and discharges water over the fire area.

(8) "Hose bibb vacuum breaker" means an atmospheric vacuum breaker designed to be attached to an outlet having a hose connection thread.

(9) "New fire sprinkler system" means a sprinkler system installed after October 1, 1992 or a sprinkler system which has undergone substantial renovations, alterations or additions representing more than 50% of the replacement cost of the existing system at the time of renovation, alteration or addition after July 1, 1993.

(10) "Owner" means the customer of a water utility.

(11) "Pressure vacuum breaker" means a device which contains a spring loaded check valve and a spring loaded atmospheric vent which opens when the pressure approaches atmospheric. The unit shall include two tightly closing shut-off valves located at each end of the device and two test cocks properly located for testing the device.

(12) "Reduced pressure principle backflow preventer" (RPD) means a device containing within its structure a minimum of two independently acting, approved check valves, together with an automatically operating pressure differential relief valve located between the two check valves. The first check valve reduces the supply pressure a predetermined amount so that during normal flow and a cessation of normal flow the pressure between the checks shall be less than the supply pressure. In case of leakage of either check valve, the differential relief valve, by discharging to atmosphere, shall operate to maintain the pressure between the checks less than the supply pressure. The unit shall include tightly closing shut-off valves located at each end of the device and each device shall be fitted with properly located test cocks.

(13) "Siamese connection" means an inlet equipped with one or more couplings to which a fire hose can be attached and through which water can be delivered by a fire department pumper to a sprinkler system.

(14) "Toxic or objectionable substance" means any compound which could affect the public health, the potability or the aesthetic quality of the water.

(b) **Air Gap.** An air gap is required between all potable water lines and equipment or systems which may be subject to contamination.

(c) **Reduced pressure principle backflow preventer**

(1) A reduced pressure principle backflow preventer (RPD) is required on a line to all facilities where toxic or objectionable substances are used in addition to the required air gap, vacuum breaker or RPD on individual pieces of equipment. Where such substances are used in a specific area, an RPD on the line to that area may be used in place of the RPD on the line to the facility.

(2) Unless otherwise required by sections 19-13-B38a (b) and 19-13-B38a (c) of the Regulations of Connecticut State Agencies, the owner shall install a reduced pressure principle backflow preventer (RPD) or an air gap in the following instances:

(A) On a line to fire sprinkler systems (including tanks) where chemicals are added or to foam fire fighting systems;

(B) On a line to pressurized water systems on ships;

(C) On a line used to supply car wash facilities where pressure is boosted;

(D) On a line to irrigation or lawn sprinkler systems where chemicals are added;

(E) On a line to all boiler systems where chemicals are added;

(F) On a line to heat exchangers where chemicals are added;

(G) On a line to solar heating systems where chemicals are added;

(H) On a line to new fire sprinkler systems with any siamese connections;

(I) Effective January 1, 1999, on a line to all existing fire sprinkler systems with any siamese connections, unless such systems are equipped with a DCVA. The owner shall have in place either an RPD or a DCVA or an air gap on such systems. Where chemicals are added to such systems, the owner shall install an RPD pursuant to subparagraph (A) of this subdivision of the Regulations of Connecticut State Agencies;

(J) On a line to plating tanks or areas. No potable water use will be allowed downstream of the device pursuant to section 19-13-B38a (e) (2) of the Regulations of Connecticut State Agencies.

(3) Unless otherwise required by sections 19-13-B38a (b) or 19-13-B38a (c) of the Regulations of Connecticut State Agencies, the owner shall install either an RPD or an air vent type backflow preventer or an air gap in the following instances:

- (A) Water supply lines to all boiler systems where chemicals are not added;
- (B) Water supply lines to carbonators for beverage machines, water conditioning systems, and commercial ice making equipment;
- (C) Water supply lines connected to solar heating systems where chemicals are not added and heat exchangers where chemicals are not added;
- (D) Water supply lines to storage tanks used for fire protection where chemicals are not added.

(d) Vacuum breaker. The owner shall install either an atmospheric vacuum breaker or a pressure vacuum breaker or an air gap in the following instances:

- (1) Irrigation or lawn sprinkler systems where chemicals are not added;
- (2) Flush valve toilets;
- (3) Inlets which are or may become submerged, except where an RPD is required pursuant to section 19-13-B38a (c) (2) of the Regulations of Connecticut State Agencies;
- (4) Hemodialysis units;
- (5) At marinas and docks on all hose bibbs or other outlets to which a hose may be connected.

(e) Installation and maintenance. The devices required by section 19-13-B38a of the Regulations of Connecticut State Agencies shall be purchased, owned, installed, and maintained by the owner in compliance with the following conditions:

(1) New devices shall conform to the revision of American Water Works Association Standard C510, C511 or the revision of the applicable standard of the American Society of Sanitary Engineering in effect at the time of building permit application.

(2) There shall be no connection made for potable water use downstream of an RPD and upstream of the equipment or systems subject to contamination except where the device is installed on the service line and the required air gap, vacuum breaker, or RPD is provided on all individual pieces of equipment.

(3) Each RPD shall be located in a room or structure that is well lighted, properly drained, and not subject to flooding. Each RPD shall be easily accessible for repair, testing and inspection.

(4) Each DCVA shall be accessible for testing and inspection.

(5) If an RPD or DCVA cannot be removed from service for maintenance and testing during normal working hours, then a second device of the same type shall be installed in parallel so as to permit inspection and repair of either unit.

(6) The public water utility shall test annually each RPD, DCVA and pressure vacuum breaker and maintain records of the test. Any malfunctioning device shall be promptly restored to proper operating condition by the owner. A copy of the results shall be forwarded to the State Department of Health Services as a part of the annual cross connection survey report. All tests must be performed by a backflow preventer tester who has passed a written and laboratory examination administered by the State Department of Health Services.

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(7) Atmospheric vacuum breakers shall be located beyond the last control valve prior to the first outlet. All vacuum breakers shall be installed at an elevation higher than any outlet according to manufacturer's instructions.

(8) An atmospheric vacuum breaker shall be installed so that it is not subject to backpressure or continuous operating pressure of more than twelve (12) hours duration. Where vacuum breakers are to be installed under section 19-13-B38a (d) of the Regulations of Connecticut State Agencies and a continuous operating pressure exists, a pressure vacuum breaker shall be used.

(9) An atmospheric vacuum breaker shall be installed in such a fashion that it will not be subject to corrosion which will render it inoperative.

(10) Any time a device is required to be installed on a fire sprinkler line, the customer shall submit to the water utility written approval of the proposed installation and device from the Fire Marshal and the customer's insurance underwriter.

Section 3. Sections 19-13-B38b through 19-13-B38g of the Regulations of Connecticut State Agencies are repealed.

**Statement of purpose:** To update regulations concerning connections to public water supply lines and set conditions for the use of double check valves in order to comply with Public Act 91-147.

Be it known that the foregoing regulations are amended as hereinabove stated by the aforesaid agency pursuant to Public Act No. 91-147 of the 1991 Public Acts, after publication in the Connecticut Law Journal on December 24, 1991, of the notice of the proposal to amend such regulations, and the holding of an advertised public hearing on the 6th day of February, 1992.

Wherefore, the foregoing regulations are hereby amended as hereinabove stated, effective when filed with the Secretary of the State.

In Witness Whereof: April 26, 1993, Yvette Melendez Thiesfield, Deputy Commissioner.

Approved by the Attorney General as to legal sufficiency in accordance with Sec. 4-169, as amended, Connecticut General Statutes: May 4, 1993.

Approved by the Legislative Regulation Review Committee in accordance with Sec. 4-170, as amended, of the General Statutes: June 29, 1993.

Two certified copies received and filed, and one such copy forwarded to the Commission on Official Legal Publications in accordance with Sec. 4-172, as amended, of the General Statutes, Secretary of the State: July 7, 1993.