

CITY OF SALEM

DEPARTMENT OF PUBLIC WORKS

ADMINISTRATIVE RULE

CHAPTER 109

DIVISION 500-3

CROSS CONNECTION CONTROL REQUIREMENTS

1.1 Purpose

The purpose of this administrative rule is:

- (a) To protect the public water system from contamination or pollution by containing within the customer's internal distribution system or private water system contaminants or pollutants which could backflow through the service connection into the public water system
- (b) To promote the elimination, containment, isolation, or control of existing cross connections, actual or potential, between the public or customer's water system and nonpotable water systems, plumbing fixtures, and industrial-process systems.
- (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 the public water system.

1.2 Applicability

This administrative rule shall apply to all premises served by the City's public water system. This administrative rule is authorized by *Salem Revised Code* Chapter 72.150.

1.3 Definitions

- (a) Air gap separation means the physical vertical separation between the free flowing discharge end of a potable water supply pipe line and the open or non-pressure receiving vessel.
- (b) Approved backflow prevention assembly means an assembly which has been approved by the State of Oregon Health Authority, for preventing backflow.
- (c) Atmospheric Vacuum Breaker (AVB) means a non-testable device consisting of an air inlet valve or float check, a check seat and an air inlet port(s). This device is designed to protect against a non-health hazard or a health hazard under a back siphonage condition only.
- (d) Auxiliary water supply means any supply of water used to augment the supply obtained through the City water system which serves the premises in question.

- (e) Backflow means the flow of water or other fluids in the direction opposite to the normal flow.
- (f) Check valve means a valve that permits flow in only one direction.
- (g) Contaminant means any physical, chemical, biological, or radiological substance or matter in water which may render the water nonpotable, as per the Oregon statutes.
- (h) Cross-connection means any link or channel between the piping which carries potable drinking water and the piping or fixtures which carry or contains nonpotable water or other substances.
- (i) Customer system means all plumbing, piping, and appurtenances on the customer's side of the point of metering or connection.
- (j) Double check valve assembly (DC) means an assembly of two independently acting check valves with shutoff valves on each side of the check valve assembly and test ports for checking the water tightness of each check valve. ~~and shall be an approved backflow prevention assembly.~~
- (k) Double check detector check valve assembly (DDC) means double check valve assembly with an approved meter and double check valve assembly bypassing the main line assembly for the purpose of measuring low or proportional flow. Main line assembly shall have a higher head loss than the bypass and shall be an approved backflow prevention assembly.
- (l) Facility survey means an on-site review of the water source, facilities, equipment, operation, and maintenance for the purpose of evaluating the hazards to the drinking water supply.
- (m) Gray water means shower and bath waste water, bathroom sink waste water, kitchen sink waste water and laundry waste water.
- (n) Pressure vacuum breaker assembly (PVB) means a mechanical device consisting of one spring loaded check valves in the supply line and a spring loaded air inlet on the downstream side of the check valve(s) which will open to atmosphere when the pressure in the device drops below one pound per square inch. The complete assembly consists of two shut-off valves and two test ports for checking water tightness of the check valve. ~~The Assembly shall be an approved backflow prevention assembly.~~
- (o) Private or public water distribution systems are "public water systems" as defined by *Oregon Administrative Rules 333-61-020*.
- (p) Reduced pressure principle backflow prevention assembly (RP) means a device for preventing backflow incorporating two check valves, a differential relief valve located between the two valves and two shutoff valves, one on each side of the assembly, test ports for checking the water tightness of the check valves and the operation of the relief valve. ~~The Assembly shall be an approved backflow prevention assembly.~~
- (q) Reduced pressure principle detector assembly (RPD) means a reduced pressure principle backflow prevention assembly with an approved meter and reduced pressure principle backflow prevention assembly bypassing the main line assembly for the purpose of measuring low or proportional flow. ~~Assembly shall be an approved backflow prevention assembly.~~
- (r) Safe drinking water (potable water) means water which has sufficiently low concentrations of microbiological, inorganic chemical, organic chemical, radiological, or

physical substances so that individuals drinking such water at normal levels of consumption will not be exposed to disease organisms or other substances which may produce harmful physiological effects.

- (s) Service connection means the point of delivery (water meter) at or near the property line.

1.4 Responsibilities

- (a) The responsibilities of the City:
- (1) To prevent contamination to the public water system due to the introduction of contaminants or pollutants through a service connection. This responsibility begins at the source and includes the entire water supply distribution system and ends at the customer connections. If, in the judgment of the City, an approved backflow prevention assembly is required for the safety of the water system, the City shall give notice to the customer to have installed such approved backflow prevention assembly(s) at specific location(s) on their premises. The customer shall immediately have installed such approved assembly(s) at their expense; and failure to comply with these requirements shall constitute grounds for suspension of water service to the premises and/or the assessment of civil penalties until such requirements have been satisfactorily met.
 - (2) To promulgate and enforce laws, rules, regulations, and policies necessary to carry out the City's designated responsibilities.
 - (3) To make inspections and determinations of the degree of hazard customers' connections present to the City's public water system.
 - (4) To make and maintain all necessary records in accordance with this administrative rule.
 - (5) To maintain a list of approved backflow prevention assemblies for use in the City's public water system.
- (b) The responsibilities of water consumers to the cross-connection program are as follows:
- (1) The water user has the primary responsibility to keep contaminants out of the public water system. This responsibility begins at the customer connection and includes any and all water distribution piping on the premises. If a cross connection or a potential for a cross-connection exists, the water customer, at the water customer's expense, must install, have tested and maintain approved backflow prevention assembly as required by the City.
 - (2) In the event of accidental cross-connection to the City's water supply system, the water customer shall immediately notify the City and must confine further spread of pollution or contamination within the customer's premises.
- (c) Wholesale water customers must promulgate policies and procedures to establish a cross connection control program that meets or exceeds that of the City's or must comply with this rule at the point of connection to the City's public water system.

1.5 Requirements

- (a) No water service connection to any premises shall be installed or maintained by the City unless the water supply is protected as required by state law and regulations and this administrative rule. Service of water to any premise shall be discontinued by the City if a backflow prevention assembly required by this rule is not installed, tested, and maintained, or if it is found that a backflow prevention assembly 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.
- (b) The customer's system should be open for inspection at all reasonable times to authorized representatives of the City determine where cross-connection or other structural or sanitary hazards, including violations of this rule, exist. When such a condition becomes known, the City 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).
- (c) **When a backflow assembly is required, the assembly** ~~A backflow prevention assembly(s)~~ must be installed on each service lateral of the customer's system at or near the property line or, with prior approval from the Director, immediately inside the building being served before the hazard, but in all cases, before the first crossing or branch line leading off the service line. ~~wherever the following conditions exist:~~
- (d) **The backflow prevention assembly must be commensurate with the degree of hazard identified. If the City determines the backflow assembly no longer protects against the degree of hazard identified, the City shall require the backflow assembly be replaced by a type that adequately protects against the hazard.**
 - (1) A minimum of a double check (DC) backflow assembly is required wherever the following conditions exist:**
 - (A) Where there is a shared meter on a multifamily connection serving five or more units.**
 - (B) Where there is a building over three stories in height or any plumbing system that is greater than or equal to thirty feet above the City water main from which it is served.**
 - (C) Where there is a booster pump on the customer side of the service connection.**
 - (D) Where there is back pressure or backsiphonage potential.**
 - (E) Any new or remodeled commercial or industrial construction.**
 - (F) Where there is an underground irrigation system installed on the customer side of the service connection.**
 - (2) A reduced pressure (RP) backflow assembly or air gap is required wherever the following conditions exist:**
 - (A) In accordance with Oregon Administrative Rules (OAR) 333-061-0070 for premises requiring isolation by a RP backflow assembly or air gap.**
 - ~~(4)~~ **(B) There is an auxiliary water supply which is or can be connected to the potable water piping.**

- ~~(A)~~ (i) If a ground water well exists on the premises, an approved RP backflow prevention assembly will be required until such time that the ground water well is abandoned in accordance with OAR Oregon Administrative Rules 690-220.
- ~~(B)~~ (ii) If the auxiliary water source is from surface water, an approved RP backflow prevention assembly will be required so long as there is infrastructure in place, either permanent or temporary, to divert water onto the premises.
- ~~(C)~~ (iii) If a gray water system is in use on the premises, an approved RP assembly is required at the customer's connection to the public water system.
- ~~(2)~~ ~~Where there is shared meter on a multifamily connection serving five or more units.~~
- ~~(3)~~ (C) When the end use of a **commercial or industrial** building is not determined or could change or when a service connection provides water to multiple tenants.
- ~~(4)~~ ~~Where there is a booster pump on the customer side of the service connection.~~
- ~~(5)~~ (D) Where there is piping for conveying liquids other than potable water and where that piping is installed and operated in a manner which could cause a cross connection.
- ~~(6)~~ (E) In the case where there has been a history of repeating the same or similar cross connection or a backflow even though these have been removed or disconnected.
- ~~(7)~~ ~~Where there is a building over three stories in height or any plumbing system that is greater than or equal to thirty feet above the city main from which it is served. Residential homes excluded.~~
- ~~(8)~~ ~~Where there is backflow or back siphonage potential.~~
- ~~(9)~~ (F) Where the system is not open for inspection.
- ~~(10)~~ (G) Where the system is subject to being submerged by hazardous or objectionable substance.
- ~~(11)~~ (H) Where there are containers or fixtures containing hazardous or objectionable substances which could backflow into the drinking water system.
- ~~(12)~~ (I) In the case of premises having internal cross-connections that cannot be permanently corrected and controlled, or intricate plumbing and piping arrangements or where entry to all portions of the premises is not readily accessible for inspection purposes, making it impractical or impossible to ascertain whether or not hazardous cross-connections exist, the City's water system shall be protected against backflow from the premises by installing and approved backflow prevention assembly in the service line.
- ~~(13)~~ ~~On the domestic service of any new or remodeled commercial or industrial connection.~~
- ~~(14)~~ (J) As determined by the **City's** Cross Connection Specialist.

- (d) Fire sprinkler systems which are served by a potable water supply within a building may be exempt from backflow prevention requirements if all of the following conditions are met:
 - (1) A regularly used fixture (i.e., toilet, sink, etc.) is installed at the end of the fire sprinkler system (excluding hose bibs); and,
 - (2) No chemicals are added to the water or the fire system; and,
 - (3) No auxiliary water system is interconnected to the fire system; and,
 - (4) There are no dead end runs in the fire system; and,
 - (5) All materials, construction, and sizing conform to plumbing code regulations for potable water systems; and,
 - (6) There are no fire department connections to the fire system.
- (e) All backflow prevention assemblies required under this rule must be a type and model approved by the State of Oregon Health Authority and installed in accordance with *OAR 333-061-0071*.
- (f) Backflow prevention assemblies installed before the effective date of this rule which were approved at the time they were installed but are not on the current list of approved assemblies, shall be permitted to remain in service provided they are properly maintained, are commensurate with the degree of hazard, are tested at least annually, and perform satisfactorily. When assemblies of this type are moved, or require more than minimum maintenance, they shall be replaced with a currently approved assembly.
 - (1) When atmospheric vacuum breakers (AVB) protecting domestic and/or irrigation systems are moved or otherwise determined to be inoperable, they must be replaced with a RP, PVB, or DC assembly, depending on the level of hazard. New installations of AVBs on irrigation services are not allowed.
- (g) Removal of an installed backflow prevention assembly must have prior approval of the Director. The conditions requiring backflow prevention have been eliminated to the satisfaction of the Director.
- (h) Failure to comply with the requirements of the City's cross-connection control program may result in the suspension of water service and/or the assessment of civil penalties.

1.6 Notification and Testing

- (a) The City shall maintain a database of all backflow prevention assemblies installed within the public water system. Information collected and stored will include:
 - (1) Size, type, and make of assembly
 - (2) Property address
 - (3) Date of installation
 - (4) Serial number
 - (5) Installation location of the assembly
 - (6) The degree and category of hazard
 - (7) Records of all tests performed on the assembly
- (b) On an annual basis, the City shall make notification to the utility account holder of the property for which the backflow prevention assembly serves that a test of the assembly is required. If the tenant and owner of the property are not the same, a courtesy notification

will be delivered to both the utility account holder and the property owner as identified in county tax records. The date of the notification shall be based on the original date of installation and testing of the assembly.

- (1) If after 30-days from the initial notification the City has not received a valid test report for the assembly, the City shall provide a second courtesy notice to the utility account holder for which the assembly serves.
 - (2) If after 30-days from the second notice the City has not received a valid test report for the assembly, a 72-hour notice of suspension of service will be delivered to the property.
 - (A) The City will attempt to make personal contact with the utility account holder when the 72-hour notice of suspension is issued. Notice will also be posted at the subject property.
 - (B) If a valid test report has not been received by the City or other arrangements made, water service may be suspended at any point after the expiration of the 72-hour notice.
 - (3) If water service to the property is suspended, service shall not resume until a valid test report for the backflow prevention assembly has been received by the City.
- (c) All backflow prevention assemblies shall be tested by Oregon Health Authority-certified Backflow Assembly Testers, or as otherwise authorized to test by Oregon Health Authority. Test reports must be submitted to the City within 10 working days of the test.
- (d) If a test report is received by the City indicating the assembly has failed, a notice will be sent to the utility account holder alerting them to the failed test. The utility account holder will then have 30-days from the date of the failed test to have repairs performed or have the assembly replaced and a passing test report submitted to the City.
 - (1) If after 30-days from the notice of a failed test the City has not received a valid passing test report for the premises, water service to the property may be suspended at any time.
- (e) Test reports may be deemed invalid for any of the following, at the discretion of the City:
 - (1) The size, type, make, or serial number provided on the test report does not match the information recorded in the City's database.
 - (2) The City does not have on file current certification for the backflow assembly tester that performed the test.
 - (3) The City does not have on file current gauge calibration for the gauge used to perform the test.
 - (4) The property address served by the assembly does not match City records.
 - (5) Other missing information that precludes the City from validating the test report.
- (f) If a test report is determined to be invalid by the City, a copy of the report will be returned to the backflow assembly tester that submitted the report indicating the reason for invalidation. A courtesy notification of the invalid test report is also sent to the utility account. A corrected test report must be submitted within the time frame outlined in **1.6(b)** to avoid disconnection of water service.