

Chapter 720

CROSS-CONNECTION CONTROL

Section 720.010. Purpose; Applicability; Interpretation. [Ord. No. 385 I, 4-8-2013]

- A. The purpose of this Chapter is to:
1. Protect the public potable water supply from contamination or pollution by containing within the consumer's internal distribution system or private water system contaminants or pollutants which could backflow through the service connection into the public potable water supply system.
 2. Promote the elimination, contamination, isolation, or control of existing cross connections, actual or potential, between the public or consumer's potable water system and non-potable water systems, plumbing fixtures, and industrial process system.
 3. Provide for the maintenance of a continuing program of cross-connection control which will systematically and effectively prevent the contamination or pollution of all potable water systems.
- B. The Chapter shall apply to all premises served by the public potable water system of the City of Diamond, Missouri.
- C. This Chapter will be reasonably interpreted by the water purveyor. It is the water purveyor's intent to recognize the varying degrees of hazard and to apply the principle that the degree of protection shall be commensurate with the degree of hazard.
1. The water purveyor shall be primarily responsible for protection of the public potable water distribution system from contamination or pollution due to backflow of contaminants or pollutants through the water service connection. The cooperation of all consumers is required to implement and maintain the program control cross-connections. The water purveyor and consumer are jointly responsible for preventing contamination of the water system.
 2. If, in the judgment of the water purveyor or his or her authorized representative, cross-connection protection is required through either piping modification or installation of an approved backflow prevention device, due notice shall be given to the consumer. The consumer shall immediately comply by providing the required protection at his or her own expense; and failure, refusal, or inability on the part of the consumer to provide such protection shall constitute grounds for discontinuing water service to the premises until such protection has been provided.

Section 720.020. Definitions. [Ord. No. 385 II (Appendix A), 4-8-2013]

The definitions listed herein shall apply in the interpretation and enforcement of this Chapter:

AIR-GAP SEPARATION — 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 overflow level rim of the receptacle, and shall be at least double the diameter of the supply pipe measured vertically above the flood level rim of the vessel, but in no case less than one (1) inch.

AUXILIARY WATER SUPPLY — Any water source or system, other than the public water supply, that may be available in the building or premises.

BACKFLOW — The flow, other than the intended direction of flow, of any foreign liquids, gases or substances into the distribution system of a public water supply.

BACKFLOW PREVENTION ASSEMBLY — Any double-check valve or reduced-pressure principle backflow preventer having resilient-seated shutoff valves on both the upstream and downstream end and the necessary test cocks as integral parts of the assembly.

CONSUMER — The owner or person in control of any premises supplied by or in any manner connected to a public water system.

CONTAINMENT — Protection of the public water supply by installing a backflow prevention assembly or air-gap separation on the main service line to a facility.

CONTAMINATION — An impairment of the quality of the water by sewage, process fluids or other wastes to a degree which could create an actual hazard to the public health through poisoning or through spread of disease by exposure.

CROSS-CONNECTION — Any physical link between a potable water supply and any other substance, fluid or source which makes possible contamination of the potable water supply due to the reversal of flow of the water in the piping or distribution system.

HAZARD, DEGREE OF — An evaluation of the potential risk to public health and the adverse effect of the hazard upon the potable water system.

1. **HAZARD, HEALTH** — Any condition, device, or practice in the water supply system and its operation which could create or may create a danger to the health and well-being of the water consumer.
2. **HAZARD, PLUMBING** — A plumbing-type cross-connection in a consumer's potable water system that has not been properly protected by a vacuum breaker, air-gap separation or backflow prevention assembly.
3. **HAZARD, POLLUTIONAL** — An actual or potential threat to the physical properties of the water system or to the potability of the public or the consumer's potable water system but which would constitute a nuisance or be aesthetically objectionable or could cause damage to the system or its appurtenances, but would not be dangerous to health.

4. **HAZARD, SYSTEM** — An actual or potential threat of severe damage to the physical properties of the public potable water system or the consumer's potable water system, or of a pollution or contamination which would have a protracted effect on the quality of the potable water in the system.

INDUSTRIAL PROCESS SYSTEM — Any system containing a fluid or solution which may be chemically, biologically or otherwise contaminated or polluted in a form or concentration such as would constitute a health, system, pollutional or plumbing hazard if introduced into a potable water supply.

ISOLATION — Protection of a facility's internal plumbing system by installing a backflow prevention assembly, air-gap separation or other backflow prevention device on an individual fixture, appurtenance or system.

POLLUTION — The presence of any foreign substance (organic, inorganic or biological) in water which tends to degrade its quality so as to constitute a hazard or impair the usefulness of the water to a degree which does not create an actual hazard to the public health but which does adversely and unreasonably affect such waters for domestic use.

PUBLIC POTABLE WATER SYSTEM — Any publicly or privately owned water system supplying water to the general public which is satisfactory for drinking, culinary and domestic purposes and meets the requirements of the Missouri Department of Natural Resources.

SERVICE CONNECTION — 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.

WATER PURVEYOR — The owner, operator or individual in responsible charge of a public water system.

Section 720.030. Cross-Connections Prohibited. [Ord. No. 385 III, 4-8-2013]

- A. No water service shall be installed or maintained to any premises where actual or potential cross-connections to the public potable or consumer's water system may exist unless such actual or potential cross-connections are abated or controlled to the satisfaction of the water purveyor, and as required by the laws and regulations of the Missouri Department of Natural Resources.
- B. No connection shall be installed or maintained whereby an auxiliary water supply may enter a public potable or consumer's water system unless such auxiliary supply and the method of connection and use of such supply shall have been approved by the water purveyor and the Missouri Department of Natural Resources.
- C. No water service shall be installed or maintained to any premises in which the plumbing system, facilities, and fixtures have not been constructed and installed using acceptable plumbing practices considered by the water purveyor as necessary for the protection of health and safety.

Section 720.040. Survey and Investigations. [Ord. No. 385 IV, 4-8-2013]

- A. The consumer's premises shall be open at all reasonable times to the water purveyor, or his or her authorized representative, for the conduction of surveys and investigations of water use practices within the 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 flow back into the public potable water system.
- B. On request by the water purveyor or his or her authorized representative, the consumer shall furnish information on water use practices within his or her premises.
- C. It shall be the responsibility of the water consumer to conduct periodic surveys of water use practices on his or her premises to determine whether there are actual or potential cross connections to his or her water system through which contaminants or pollutants could backflow into his or her or the public potable water system.

Section 720.050. Type of Protection Required. [Ord. No. 385 V, 4-8-2013]

- A. The type of protection required by this Chapter shall depend on the degree of hazard which exists, as follows:
 - 1. An approved air-gap separation shall be installed where the public potable water system may be contaminated with substances that could cause a severe health hazard.
 - 2. An approved air-gap separation or an approved reduced-pressure principle backflow prevention assembly shall be installed where the public potable water system may be contaminated with a substance that could cause a system or health hazard.
 - 3. An approved air-gap separation or an approved reduced-pressure principle backflow prevention assembly or an approved double-check valve assembly shall be installed where the public potable water system may be polluted with a substance that could cause a pollution hazard not dangerous to health.

Section 720.060. Where Protection Required. [Ord. No. 385 VI, 4-8-2013]

- A. An approved backflow prevention assembly shall be installed on each service line to a consumer's water system serving premises where, in the judgment of the water purveyor or the Missouri Department of Natural Resources, actual or potential hazards to the potable water system exist. The type and degree of protection required shall be commensurate with the degree of hazard.
- B. An approved air-gap separation or reduced-pressure principle backflow prevention assembly shall be installed at the service connection or within any premises where, in the judgment of the water purveyor or the Missouri Department of Natural Resources, the nature and extent of activities on the premises, or the material used in connection with activities, or material stored on the premises, would present an immediate and dangerous hazard to health should a cross-connection occur, even though such cross-connection may not exist at the time the backflow prevention

device is required to be installed. This includes but is not limited to the following situations:

1. Premises having auxiliary water supply, unless the quality of the auxiliary supply is acceptable to the water purveyor and the Missouri Department of Natural Resources.
 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 inspection for cross-connections cannot be made with sufficient frequency or at sufficiently short notice to assure the cross-connections do not exist.
 4. Premises having a repeated history of cross-connections being established or reestablished.
 5. Premises, which due to the nature of the enterprise therein, are subject to recurring modification or expansion.
 6. Premises on which any substance is handled under pressure so as to permit entry into the public water supply, or where a cross-connection could reasonably be expected to occur. This shall include the handling of process waters and cooling waters.
 7. Premises where materials of a toxic or hazardous nature are handled such that if back siphonage or back pressure should occur, a serious health hazard may result.
- C. The types of facilities listed in Section 720.065 fall into one (1) or more of the categories of premises where an approved air-gap separation or reduced-pressure principle backflow prevention assembly is required by the water purveyor and the Missouri Department of Natural Resources to protect the public water supply and must be installed at these facilities unless all hazardous or potentially hazardous conditions have been eliminated or corrected by other methods to the satisfaction of the water purveyor and the Missouri Department of Natural Resources.

Section 720.065. Types of Facilities Representing Hazards. [Ord. No. 385 Appendix B, 4-8-2013]

- A. The following are types of facilities representing cross-connection hazards:
1. Aircraft and missile manufacturing plants;
 2. Automotive plants, including those plants that manufacture motorcycles, automobiles, trucks, recreational vehicles and construction and agricultural equipment;
 3. Potable water dispensing stations that are served by a public water system;
 4. Beverage bottling plants, including dairies and breweries;

5. Canneries, packing houses and reduction plants;
6. Car washes;
7. Chemical, biological and radiological laboratories, including those in high schools, trade schools, colleges, universities and research institutions;
8. Hospitals, clinics, medical buildings, autopsy facilities, morgues, mortuaries and other medical facilities;
9. Metal or plastic manufacturing, fabrication, cleaning, plating or processing facilities;
10. Plants manufacturing paper and paper products;
11. Plants manufacturing, refining, compounding or processing fertilizer, film, herbicides, natural or synthetic rubber, pesticides, petroleum or petroleum products, pharmaceuticals, radiological materials or any chemical that would be a contaminant to the public water system;
12. Commercial facilities that use herbicides, pesticides, fertilizers or any chemical that would be a contaminant to the public water system;
13. Plants processing, blending or refining animal, vegetable or mineral oils;
14. Commercial laundries and dye works;
15. Sewage, stormwater and industrial waste treatment plants and pumping stations;
16. Waterfront facilities, including piers, docks, marinas and shipyards;
17. Industrial facilities that recycle water;
18. Restricted or classified facilities or other facilities closed to the supplier of water or the Department;
19. Fire sprinkler systems using any chemical additives;
20. Auxiliary water systems;
21. Irrigation systems with facilities for injection of pesticides, herbicides or other chemicals or with provisions for creating back pressure;
22. Portable tanks for transporting water taken from a public water system; and
23. Facilities that have pumped or repressurized cooling or heating systems that are served by a public water system, including all boiler systems.

Section 720.070. Backflow Prevention Assemblies. [Ord. No. 385 VII, 4-8-2013]

- A. Any backflow prevention assembly required to protect the facilities listed in Section 720.065 shall be of a model or construction approved by the water purveyor and the Missouri Department of Natural Resources.

1. Air-gap separation to be approved shall be at least twice the diameter of the supply pipe, measured vertically above the top rim of the vessel, but in no case less than one (1) inch.
 2. A double-check valve assembly or reduced-pressure principle backflow prevention assembly shall be approved by the water purveyor and the Missouri Department of Natural Resources.
- B. Existing backflow prevention assemblies approved by the water purveyor at the time of installation and properly maintained shall, except for inspection and maintenance requirements, be excluded from the requirements of this Chapter so long as the water purveyor is assured that they will satisfactorily protect the water system. Whenever the existing assembly is moved from its present location or requires more than minimum maintenance, or when the water purveyor finds that the maintenance constitutes a hazard to health, the unit shall be replaced by a backflow prevention assembly meeting the requirements of this Chapter.

Section 720.080. Installation of Backflow Prevention Assemblies. [Ord. No. 385 VIII, 4-8-2013]

- A. Backflow prevention assemblies required by this Chapter shall be installed at a location and in a manner approved by the water purveyor and shall be installed at the expense of the water consumer.
- B. Backflow prevention assemblies installed on the service line to the consumer's water system shall be located on the consumer's side of the water meter, as close to the meter as is reasonably practical, and prior to any other connection.
- C. Backflow prevention assemblies shall be located so as to be readily accessible for maintenance and testing, protected from freezing. No reduced-pressure principle backflow prevention assembly shall be located where it will be submerged or subject to flooding by any fluid.

Section 720.090. Inspection and Maintenance. [Ord. No. 385 IX, 4-8-2013]

- A. It shall be the consumer at any premises on which backflow prevention assemblies required by this Chapter are installed to have inspection, tests, and overhauls made in accordance with the following schedule or more often where inspections indicate a need.
 1. Air-gap separation shall be inspected at the time of installation and at least every twelve (12) months thereafter.
 2. Double-check valve assemblies shall be inspected and tested for tightness at the time of installation and at least every twelve (12) months thereafter.
 3. Reduced-pressure principle backflow prevention assemblies shall be inspected and tested for tightness at the time of installation and at least every twelve (12) months thereafter.

- B. Inspections, tests, and overhauls of backflow prevention assemblies shall be made at the expense of the water consumer and shall be performed by a State of Missouri certified backflow prevention assembly tester.
- C. Whenever backflow prevention assemblies required by this Chapter are found to be defective, they shall be repaired or replaced at the expense of the consumer without delay.
- D. The water consumer must maintain a complete record of each backflow prevention assembly from purchase to retirement. This shall include a comprehensive listing that includes a record of all tests, inspections, and repairs. Records of inspections, tests, repairs, and overhauls shall be made available to the water purveyor upon request.
- E. Backflow prevention assemblies shall not be bypassed, made inoperative, removed, or otherwise made ineffective.

Section 720.100. Violations. [Ord. No. 385 X, 4-8-2013]

- A. The water purveyor shall deny or discontinue, after reasonable notice to the occupants thereof, the water service to any premises wherein any backflow prevention assembly required by this Chapter is not installed, tested, and maintained in a manner acceptable to the water purveyor or if it is found that the backflow prevention assembly has been removed or bypassed or if an unprotected cross-connection exists on the premises.
- 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 to the satisfaction of the water purveyor.