City of Pataskala
Department of Utilities
Water Treatment Division
REGULATIONS ON CROSS-CONNECTION CONTROL

Section 1. Cross-connection Control-General Policy

A. Purpose: The purpose of these Rules and Regulations is:
   1. To protect the public potable water supply from contamination or pollution by isolating within the consumer's water system contaminants or pollutants, which could backflow through the service connection into the public potable water system.
   2. To promote the elimination or control of existing cross-connections, actual or potential, between the public and consumer's potable water system and non-potable water systems, plumbing fixtures and sources or systems containing process fluids.
   3. To provide for the maintenance of a continuing program of cross-connection control, which will systematically and effectively prevent the contaminant or pollution of the public and consumer's potable water system.

B. Application: These Rules and Regulations shall apply to all premises served by the public potable water system of the City of Pataskala, Ohio.

C. Policy: The Superintendent of Water shall be responsible for the protection of the public water system from contamination due to backflow of contaminants through the water service connection. If, in the judgment of the Superintendent of Water, an approved backflow prevention device is necessary at the water service connection to any consumer's premises for the safety of the water system, the Superintendent of Water or his authorized representative shall give notice to the consumer to install such approved backflow prevention device at each service connection to his/her premises. The consumer shall immediately install such approved device or devices at his/her own expense, and failure, refusal, or inability on the part of the consumer to install such device or devices immediately shall constitute grounds for discontinuing water service to the premises until such device or devices have been installed.

Section 2. Definitions:

A. The following definitions shall apply in the interpretation and enforcement of these Rules and Regulations:
   1. 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.
   2. 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.
   3. Auxiliary Water System means any water system on or available to the premises other than the public water system and includes the water supplied by the system. These auxiliary waters may include water from another supplier's public water system or water from a source such as wells, lakes, or streams; or process fluids; or used water. They may be polluted or contaminated or objectionable or constitute a water source or system over which the supplier of water does not have control.
   4. Backflow means the flow of water of 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.
   5. Backflow prevention device means any device, method, or type of construction intended to prevent backflow into a potable water system.

6. Consumer means the owner or person in control of any premises supplied by or in any manner connected to a public water system.
7. 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.
8. Contamination means an impairment of the quality of the water by sewage or process fluid or waste to a degree, which could create an actual hazard to the public health through poisoning or through spread of disease by exposure.
9. Cross-connection means any arrangement whereby backflow can occur.
10. Degree of Hazard is a term derived from an evaluation of the potential risk to health and the adverse effect upon potable water system.
11. Director means the director of the Ohio Environmental Protection Agency or his duly authorized representative.
12. 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 water tightness of each check valve.
13. 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 and well-being of users. The word "severe" as used to qualify "health hazard" means to the health of the user that could reasonably be expected to result in significant morbidity or death.
14. Interchangeable connection means an arrangement of device that will allow alternate but not simultaneous use of two sources of water.
15. Non-potable water means water not safe for drinking, personal, or culinary use.
16. Person means the state, any political subdivision, public or private, corporation, individual, partnership, or other legal entity.
17. Pollution means the presence in water of any foreign substance that tends to degrade its quality so as to constitute a hazard or impair the usefulness or quality of the water to a degree, which does not create and actual hazard to the public health, but which does adversely and unreasonably affect such waters for domestic use.
18. Potable water means water, which is satisfactory for drinking, culinary, and domestic purposes and meets the requirements of the Ohio Environmental Protection Agency.
19. 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

health, pollution, or system hazard, if introduced into the public or potable consumer's water system. This includes, but is not limited to:

    a. Polluted or contaminated waters,
    b. Process waters
    c. Used water originating from the public water system, which may have deteriorated in sanitary quality
    d. Cooling waters
    e. Contaminated natural waters taken from wells
    f. Chemicals in solution or suspension
    g. Oils, gases, acids, alkalis, and other liquid and gaseous fluids used in industrial or other processes, or for firefighting purposes.

20. Public water system has the meaning ascribed to such term in Sections 6109.01 and 6109.02 of the Ohio Revised Code.
21. Reduced pressure principle backflow prevention device means a device containing a minimum of two independently acting check valves together with an automatically operated pressure differential relief valve located between two check valves. During normal flow and at the cessation of normal flow the pressure between these two check valves shall be less

than the supply pressure. In case of leakage of either check valve the differential relief valve, by discharging into 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.

22. 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.
23. Supplier of water means the owner or operator of a public water system.
24. System hazard means a condition posing an actual or potential threat of damage to the physical properties of the public water system or a potable consumer's water system.
25. Pollution hazard means a condition through, which an aesthetically objectionable or degrading material not dangerous to health may enter the public water system or a potable consumer's water system.
26. 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.

Section 3. Water System:

A. The water system shall be considered as made up of two parts: the public potable water system and the consumer's water system.

B. The public potable water system shall consist of the source facilities and the distribution system, and shall include all those facilities of the potable water system under the control of the Superintendent of Water up to the point where the consumer's water system begins.

C. The source shall include all components of the facilities utilized in the production, treatment, storage and delivery of water to the public distribution system.

D. The public distribution system shall include the network of conduits used for delivery of water from the source to the consumer's water system.

E. The consumer's water system shall include those parts of the facilities beyond the service connection, which are utilized in converting water from the public distribution system to points of use.

Section 4. Cross-connections Prohibited:

A. No water service connection 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 Superintendent of Water.

B. No connection shall be installed or maintained whereby water from an auxiliary water system may enter a public potable or consumer's water system unless such auxiliary water system and the method of connection and use of such system shall have been approved by the Superintendent of Waster and by the Director of the Ohio Environmental Protection Agency as required by Section Revised Code.

Section 5. Survey and Investigations:

A. The consumer's premises shall be open at all reasonable times to the Superintendent of Water, or his/her duly 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 backflow into the public water system.

B. On request by the Superintendent of Water, or his/her duly authorized representative, the consumer shall furnish information on water use practices within his/her premises.

C. It shall be the responsibility of the water consumer to conduct periodic surveys of water use practices or his/her premises to determine, whether there are actual or potential crossconnections in his/her water system, through which contaminants or pollutants could backflow into his/her or the public potable water system.

Section 6. 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 Superintendent of Water or the Director, actual or potential hazards to the public potable water system exist.

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

1. Premises having an auxiliary water system, unless such auxiliary system is accepted as an additional source by the Superintendent of Water and the source is approved by the Director of the State of Ohio Environmental Protection Agency;
2. Premises on which any substance is handled in such a fashion as to create an actual or potential hazard to the public potable water system. This shall include premises having sources or systems containing process fluids or waters originating from the public potable water system, which are no longer under the sanitary control of the Superintendent of Water;
3. Premises having internal cross-connections that, in the judgment of the Superintendent of Water, are not correctable, or intricate plumbing arrangements, which make it impractical to determine whether or not cross-connection exists;
4. Premises where, because of security requirements of 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 reestablished;
6. Others specified by the Superintendent of Water or the Director.

C. 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 Superintendent of Water or the Director determines that no actual or potential hazard to the public potable water system exists:

1. Hospitals, mortuaries, clinics, nursing homes
2. Food Service Operations; Restaurants, Cafeterias, etc.
3. Laboratories
4. Piers, docks, waterfront, facilities
5. Sewage treatment plants, sewage pumping stations or storm water pumping stations
6. Food or beverage processing facilities
7. Chemical production facilities
8. Metal plating industries
9. Petroleum processing or storage facilities
10. Radioactive material processing facilities or nuclear reactors
11. Car washes
12. Automotive Service/Repair Facilities
13. Any facilities (residential, commercial, and industrial) that utilize and irrigation system connected to City water supply.
14. Any facilities (residential, commercial, and industrial) that utilize onsite auxiliary water supply (well) in addition with public water supplied by Pataskala.
15. Others specified by the Director of Utilities, Superintendent of Water, or the Ohio EPA Director.

D. An approved backflow prevention device shall be installed at any point of connection between the public potable or consumer's water system and an auxiliary water system, unless such auxiliary water system is accepted as an additional source by the Superintendent of Water and the source is approved by the Director of the Ohio Environmental Protection Agency.

Section 7. Type of Protection Required:

A. The type of protection required under Sections 6.A, 6.B, and 6.C of these types regulations 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 system or health hazard;
2. An approved air gap separation or an approved reduced pressure principle backflow prevention device shall be installed, where the public potable water system may be contaminated with any substance that could cause a system or health hazard;
3. An approved air gap separation or an approved reduced pressure principle backflow prevention device or an approved double check valve assembly shall be installed where the public potable water system may be polluted with substances that could cause a pollution hazard not dangerous to health.

B. The type of protection required under Section 6.D of these regulations shall be an approved air gap separation or an approved interchangeable connection.

C. Where an auxiliary water system is used as a secondary source or water for a fire protection system, the provisions of Section 7.B for an approved air gap separation or an approved interchangeable connection may not be required, provided;

1. At premises where the auxiliary water system may be contaminated with substances that could cause a system or health hazard, the public or consumer's potable water system shall be protected against backflow by installation of an approved reduced pressure principle backflow prevention device;
2. At all other premises, the public or consumer's potable water system shall be protected against backflow by installation of either an approved reduced pressure principle backflow prevention device or an approved double check valve assembly.
3. The public or consumer's potable 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 the public or consumer's potable water system.
5. The water in the fire protection system shall be used for fire protection only, with no regular use of water from the fire protection system downstream from the approved backflow prevention device.
6. The water in the fire protection system shall contain no additives.

Section 8. Backflow Prevention Devices

A. Any backflow prevention device required by these rules and regulations shall be of a model or construction approved by the Superintendent of Water and the Director and shall comply with the following:

1. An air gap separation, to be approved, shall be at least twice the diameter of the supply pipe, measured vertically above the top of the rim of the vessel, but in no case less than one inch.
2. A double check valve assembly or a reduced pressure principle backflow prevention device shall be approved by the Superintendent of Water, and shall appear on the current list of approved backflow prevention devices of the Ohio Environmental Protection Agency.
3. An interchangeable connection, to be approved, shall be either a swing type connector or a four-way valve of the lubricated plug type that operates through a mechanism, which unseats

the plug, turns it ninety degrees and reseats the plug. Four-way valves shall not be used as stop valves but must have separate stop valves on each pipe connected to the valves. The telltale port on the four-way valve shall have no piping connected and the threads or flange on this port shall be destroyed so that a connection cannot be made.

B. Existing backflow prevention devices approved by the Superintendent of Water or the Director of the Ohio Environmental Protection Agency at the time of installation an d properly maintained shall, except for inspection, testing, and maintenance requirements, be excluded from the requirement of Section 8.A of this regulation providing the Superintendent of Water is assured that they will satisfactorily protect the public potable water system. Whenever the existing device is moved from the present location or requires more than minimum maintenance or when the Superintendent of Water finds that the maintenance of the device shall be replaced by a backflow prevention device meeting the requirements of these regulations.

Section 9. Installation:

A. Backflow prevention devices required by these rules and regulations shall be installed at a location and in a manner approved by and at the expense of the water consumer. In addition, any backflow prevention device required by Section 7.B and 7.C of these regulations shall be installed at a location and in a manner approved by the Director of the Ohio Environmental Protection Agency as required by Section 6109.13 of the Ohio Revised Code.

B. Backflow prevention devices installed on the service line to a 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. Pits or vaults shall be of water-tight construction, be so located and constructed as to prevent flooding and shall be maintained free from standing water by means of either a sump pump or a suitable drain. Such sump pump or drain shall not connect to a sanitary sewer nor permit flooding of the pit or vault by reverse flow from its point of discharge. An access ladder and adequate natural or artificial lighting shall be provided to permit maintenance, inspection, and testing of the backflow prevention device.

D. Reduced pressure principle backflow prevention devices must be installed above ground level or floor level, whichever is higher.

Section 10. Inspection and Maintenance:

A. It shall be the duty of the consumer at any premises on which backflow prevention devices required by these regulations are installed to have inspections, tests, and overhauls made in accordance with the following schedule, or more often where inspections indicate a need:

1. Air gap separations shall be inspected at the time of installation and at least every twelve months thereafter;
2. Double check valve assemblies shall be inspected and tested for tightness at the time of installation and at least every twelve months thereafter;
3. Reduced pressure principle backflow prevention devices shall be inspected and tested for tightness at the time of installation and at least every twelve months thereafter,

   They shall be dismantled, inspected internally, cleaned and repaired whenever needed and at least every five-years.
4. Interchangeable connections shall be inspected at the time of installation and at least every twelve months thereafter;

B. Inspections, tests, and overhauls of the backflow prevention devices shall be made at the expense of the water consumer and shall be performed by the Superintendent of Water or a person approved by the Superintendent of Water as qualified to inspect, test, and overhaul backflow prevention devices.

C. Whenever backflow prevention devices required by these regulations are found to be defective, they shall be repaired, overhauled or replaced at the expense of the consumer without delay.

D. The water consumer must maintain a complete record of each backflow prevention device from purchase to retirement. This shall include a comprehensive listing that includes a record of all tests, inspections, repairs, and overhauls. Records of tests, inspections, repairs, and overhaul shall be submitted to the Superintendent of Water.

E. Backflow prevention devices shall not be bypassed, made inoperative, removed or otherwise made ineffective without specific authorization by the Superintendent of Water.

Section 11. Booster Pumps:

A. Where a booster pump has been installed on the service line to or within any premises, such pump shall be equipped with a low pressure cut-off device 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.

B. It shall be the duty of the water consumer to maintain the low-pressure cut-off device in proper working order and to certify to the Superintendent of Water, at least once a year, that the device is operating properly.

Section 12. Violations:

A. The Superintendent of Water shall deny or discontinue, after reasonable notice to the occupants thereof, the water service to any premises wherein any backflow prevention device required by these regulations is not installed, tested, and maintained in a manner acceptable to the Superintendent of Water, or if it is found that the backflow 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 these regulations is not installed and maintained in working order.

B. Water service to such premises shall not be restored until the consumer has connected or eliminated such conditions or defects in conformance with these regulations and to the satisfaction of the Superintendent of Water.

List of Approved
Backflow Prevention Devices

1. General:
   In accordance with 3745-95-06 (A), any backflow prevention device required by these Rules 3745-95-04 and 3745-95-05 shall be of a model or construction approved by the supplier of water and the Director of Ohio Environmental Protection Agency.

2. Device Approval List:
   The list of State approved devices is subject to change as new units are designed, tested, and approved, therefore a new list of approved units is not included in this regulation, but may be obtained by writing to the following:

   Cross-Connection Control
   Division of Public Water Supply
   P.O. Box 1049
   Columbus, Ohio 43266-1049

Inspection, Testing, and Maintenance Procedures
For Backflow Prevention Devices

Maintenance and regular inspection of backflow prevention devices are integral parts of any crossconnection control program.

Responsibility for installing and maintaining the device rests with the consumer. Each device must be inspected at regular intervals and records of the inspection, testing, and repairs made available to the supplier of water and/or the regulatory agency.

The supplier of water and the regulatory agency should be prepared to give technical assistance in the installation of the device.

Test Gauges:
Two types of test gauges are used in testing backflow prevention devices. A differential pressure gauge is required for testing reduced pressure principle backflow prevention devices and the newer type pressure vacuum breakers. Two Bourdon tube gauges (either separately or duplex mounted) are required for testing double check valve assemblies; a single Bourdon tube gauge is required for testing low suction pressure cut-off devices and minimum pressure sustaining valves.

Differential pressure gauges measure the difference in pressure between two points in the system. The range of these gauges is usually limited to 15 psi, therefore, they cannot be used to measure line pressure. They usually are of the balanced diaphragm type, which contains a pressure differential diaphragm and a magnetic drive, and are protected from excess or reverse pressure by drive stops.

Bourdon tube gauges measure the gauge pressure (zero is atmospheric pressure) at a point in the system. The two required Bourdon gauges may be either separately or duplex mounted. In a duplex gauge, both Bourdon tubes are contained in a single housing and the two indicator needles are mounted on a common dial. The duplex gauge is easier to read, especially for some of the diagnostic tests.

A variety of pre-assembled test kits are available from a number of manufacturers. These kits differ in the connections and needle valves provided, which may require some adjustment of the test procedures outlined in this regulation. It is important that the tests be thoroughly understood before any such adjustments are made. Test kits may also be made up from high quality components.

Only high quality, calibrated gauges may be used. It is recommended that the filter/strainers be used on all of the connecting hoses. A variety of adapter fittings are required for attaching the connector hoses to the test cocks of the various sizes of backflow prevention devices.

The test gauges are precision instruments and must be treated with care. The needle valves must be closed only finger tight or they may be irreparably damaged and have to be replaced. The gauges must be drained after each use and all valves left open. Prior to the start of each test, all valves on the gauges should then be closed.

Air Gap Separation Equipment

Required:

A measuring tape to ascertain whether the air gap is properly installed.

Requirements:

1. Air gap separations shall be inspected at the time of installation and at least every twelve months thereafter by an inspector approved by the supplier of water.
2. They shall not be bypassed, or otherwise made ineffective.
3. All defects found during inspection of the air gap shall be satisfactorily corrected without delay.

Inspection Procedure:

1. Determine that the air gap separation provides the required minimum air gap.
2. Confirm that the air gap separation is not being bypassed.