

## MANUAL OF REGULATIONS

### REGULATING BACKFLOW AND BACKSIPHONAGE OF CONTAMINANTS DUE TO CROSS CONNECTIONS FOR THE CITY OF BONNER SPRINGS, KANSAS 1992 EDITION

#### RESPONSIBILITY:

The City Manager shall be responsible for effectively conducting the cross connection control program of the City of Bonner Springs public potable water supply. If in the judgment of said City Manager, an approved backflow prevention device is required the City Manager or his agent will give notice in writing to the customer to install the proper device. The customer shall immediately install the proper device at the customers expense. Failure to comply shall be grounds for discontinuing water service to said customer until the device is properly installed.

#### SECTION 1 Definitions

1. Agency. The department of the municipal government or water purveyor invested with the responsibility for enforcement of this ordinance.
2. Air Gap. The unobstructed vertical distance at least twice the diameter of the supply line and no less than one inch, 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.
3. Approved Device. Shall mean devices tested and accepted by a recognized testing laboratory approved by the Kansas Department of Health and Environment and the City of Bonner Springs.
4. Backflow. The flow of water or other substances into the distribution system of a potable supply of water from any source other than its intended source. Backsiphonage is one type of backflow.

5. Backflow Preventer. A device or means to prevent backflow.
6. Backsiphonage. The flowing back of contaminated or polluted substances from a plumbing fixture or any vessel or source into the potable water supply system due to negative pressure in said system.
7. Contaminant. Any substance that upon entering the potable water supply would render it a danger to the health or life of the consumer.
8. Cross Connection. any physical connection or arrangement between two otherwise separate piping systems, one of which contains potable water and the other which contains water or any substance of unknown or questionable quality whereby there may be flow from one system to the other.
9. Double Check Valve Assembly. A device consisting of two internally loaded soft seated check valves with positive shut-off valves on both upstream and downstream ends, and properly located test ports.
10. Dual Check Valve. A device consisting of two internally loaded soft seated check valves. This device does not contain test ports and is acceptable for use only at the meter of residential customers.
11. Free Water Surface. A water surface at atmospheric pressure.
12. Flood Level Rim. The edge of the receptacle from which water overflows.
13. Frost Proof Closet. A hopper with no water in the bowl and with the trap and water supply control valve located below frost line.
14. KDHE. The Kansas Department of Health and Environment.
15. Plumbing. The practice, materials and fixtures used in the installation maintenance, extension and alteration of all piping fixtures, appliances and appurtenances.
16. Pollution. The presence of any foreign substance (organic inorganic or biological) in water which tends to egrade its quality so as to constitute a hazard or impair the usefulness or quality of the water to a degree which does not create an actual hazard to the public health but which does adversely affect the water.

17. Reduced Pressure Zone Backflow Preventer. An assembly of two independently acting soft seated approved check valves together with a hydraulically operating mechanically independent differential pressure relief valve located between the check valves and at the same time below the first check valve. The unit shall contain properly located test cocks and resilient seated shut-off valves at each end of the assembly. To be approved these assemblies must be accessible for inspection and testing and be installed in an above ground location where no part of the assembly will be submerged.
18. Tester. A trained technician certified in the testing and repair of backflow preventers.
19. Vacuum. Any absolute pressure less than that exerted by the atmosphere.
20. Vacuum Breaker. A device that permits entrance of air into the water supply distribution line to prevent backsiphonage.
21. Water, Potable. Water free from impurities in amounts sufficient to cause disease or harmful physiological effects. Its quality shall conform to Kansas Department of Health and Environment requirements for public water supplies.
22. Water, Non potable. Water that is not safe for human consumption or that is of questionable potability.

## SECTION 2 Prohibited Connections

1. Connections to Boilers. Potable water connections to boiler feed water systems in which boiler water conditioning chemicals are or can be introduced shall be made through an air gap or through a reduced pressure zone principle backflow preventer located in the potable water line before the point where such chemicals may be introduced.
2. Some prohibited connections. Connection to the public potable water supply system for the following is prohibited unless properly protected by the appropriate backflow prevention device.
  - (a) Bidets
  - (b) Operating, dissecting, embalming, and mortuary tables or similar equipment-in such installations the hose used for water supply shall terminate at least 12 inches away from every point of the table or attachments.
  - (c) Pumps for non potable substances. Priming only through an air gap.

- (d) Building drains, sewers, or vent systems
  - (e) Commercial buildings or industrial plants manufacturing or otherwise using polluting or contaminating substances.
  - (f) Any fixture of similar hazard.
3. Refrigeration Unit Condensers and Cooling Jackets. Except when potable water provided for a refrigeration condenser or cooling jacket is entirely outside the piping or tank containing a toxic refrigerant, the inlet connection shall be provided with an approved backflow preventer. Heat exchange used to heat water for potable use shall be of the double wall type.
4. Approved Devices Required. The type of protective device required under this ordinance shall be determined by the degree of hazard which exists as follows:
- (a) Premises having auxiliary water supply shall protect the public system by either an approved air gap or an approved reduced pressure principle backflow prevention assembly.
  - (b) Premises having water or substances which would be non hazardous to the health and well being of the consumers shall protect the public system with no less than an approved double check valve assembly.
  - (c) Premises where material dangerous to health is handled in a manner which creates an actual or potential hazard shall protect the public system by an approved air gap or an approved reduced pressure principle backflow prevention assembly.
  - (d) Premises where cross connections are uncontrolled shall protect the public water supply by installing an approved air gap or an approved reduced pressure principle backflow prevention device at the service connection.
  - (e) Premises where because of security requirements or other prohibitions it is impossible to complete and in plant cross connection inspection, the public system shall be protected by an approved air gap or an approved reduced pressure principle backflow prevention assembly.

Premises which may fall into one or more of the above mentioned categories may be, but are not limited to the following:

- (1) Beverage bottling plants

- (2) Buildings - Hotels, Apartments, Public or private buildings, or other structures having actual or potential cross connections.
- (3) Car wash facilities
- (4) Chemical manufacturing, handling, or processing plants.
- (5) Chemically contaminated water.
- (6) Dairies and cold storage facilities.
- (7) Film or photography processing laboratories.
- (8) Fire systems
- (9) Hospitals, Medical Centers, Morgues, Mortuaries, Autopsy facilities, Clinics, or Nursing and Convalescent homes.
- (10) Irrigation systems
- (11) Laundries
- (12) Metal cleaning, processing, or fabricating plants
- (13) Oil and gas production, storage, or transmission facilities.
- (14) Packing or food processing plants.
- (15) Paper and paper products plants.
- (16) Power Plants
- (17) Radioactive materials plants or handling facilities
- (18) Restricted or classified facilities
- (19) Rubber Plants
- (20) Sand, Gravel, or Asphalt plants.
- (21) Schools or Colleges
- (22) Sewage and storm drainage facilities and reclaimed water systems
- (23) Solar heating systems
- (24) Temporary service - fire hydrants, air valves, blow-offs and other outlets.
- (25) Water front marinas.

### SECTION 3 Installation.

Approved devices shall be installed at all fixtures and equipment where backflow or backsiphonage may occur and where a minimum air gap between the potable water outlet and the fixture or equipment flood-level rim cannot be maintained. Backflow and backsiphonage devices of all types shall be in an accessible location. Installation in pits or any other location not properly drained shall be prohibited, except that dual check valves may be installed in the meter box.

- (a) Connections not subject to backpressure. Where a water connection is not subject to back pressure, a vacuum breaker shall be installed on the discharge side of the last valve on the line serving the fixture or equipment. A list of some conditions requiring protective devices of this kind are given in the following table titled Cross Connections Where Protective Devices are Required.

**CROSS CONNECTIONS WHERE PROTECTIVE DEVICES ARE REQUIRED AND  
CRITICAL LEVEL (C-L) SETTINGS FOR VACUUM BREAKERS.**

<u>Fixtures or Equipment</u>	<u>Method of Installation</u>
Aspirators & Ejectors	C-L at least 6 inches above flood level of receptacle served
Dental Units	On models without built in vacuum breakers C-L at least 6 inches above flood level rim of bowl.
Commercial Dish Washing Machine	C-L at least 6 inches above flood level of machine. Installed on both hot and cold water supply lines.
Garbage Can Cleaning Machines	C-L at least 6 inches above flood level of machine. Installed on both hot and cold water supply lines
Hose Outlets	C-L at least 6 inches above highest point on hose line.
Commercial Laundry Machines	C-L at least 6 inches above flood level of machine. Installed on both hot and cold water supply lines.
Lawn Sprinklers	C-L at least 6 inches above highest sprinkler head or discharge outlet.
Steam Tables	C-L at least 6 inches above flood level rim.
Tanks and Vats	C-L at least 6 inches above flood level rim or line.
Through Urinals	C-L at least 30 inches above perforated flush pipe



Flush Tanks

Equipment with approved ball cock, installed according to manufacturer's Instructions.

Hose Bibs

C-L at least 6 inches above flood level of receptacle served.

- (b) Connections subject to backpressure. Where a potable water connection is made to a line, fixture, tank, vat, pump, or other equipment with a hazard of backflow or backsiphonage where the water connection is subject to back pressure, and an air gap cannot be installed, the City of Bonner Springs require the use of an approved reduced pressure principle backflow preventer. A partial list of such connections is shown in the following table "Partial List of Cross Connections Subject to Back Pressure".

PARTIAL LIST OF CROSS CONNECTIONS SUBJECT TO BACK PRESSURE

Chemical Lines  
Dock Water Outlets  
Individual Water Supplies  
Industrial Process Water Lines  
Tanks & Vats - Bottom Inlets

Pumps  
Stream lines  
Swimming pools  
Pressure tanks  
Hose bibs

- (c) Barometric Loop. Water connections where an actual or potential backsiphonage hazard exists may in lieu of devices specified above be provided with a barometric loop. Barometric loops shall precede the point of connection.
- (d) Dual Check Valve. Dual check valves may be installed at the meter. These valves shall be inspected and repaired not less frequent than every third year. These valves shall be installed only in situations where the City of Bonner Springs is assured that only non contaminating substances are subject to backflow into the potable system.
- (e) Vacuum Breakers. Atmospheric vacuum breakers shall be installed with the critical level at least six inches above the flood rim of the fixture they serve and on the discharge side of the last control valve to the fixture. No shut off valve or faucet shall be installed beyond the atmospheric vacuum breaker. Pressure vacuum breakers shall be installed with the critical level at least twelve inches above the flood rim but may have control valves down steam from the vacuum breaker. For closed equipment or vessels such as pressure sterilizers the top of the

vessel shall be considered the flood level rim and a check valve shall be installed on the discharge side of the pressure vacuum breaker.

#### SECTION 4 Maintenance and Repair

It shall be the responsibility of building and premise owners to maintain all backflow preventers and vacuum breakers within the building or on the premises in good working order and to make sure no piping or other arrangements have been installed for the purpose of bypassing the backflow devices. Testing and repair of these devices should be made by qualified technicians. (Qualified technicians are those technicians who have completed a Kansas Department of Health and Environment approved training course and have passed a written examination such as the American Backflow Prevention Association device testers examination.) The City Manager shall certify the device testers after ascertaining the technician meets the above qualifications. The City Manager will also assure the proper installation of all backflow preventers and will set appropriate testing and overhaul schedules for such devices. Testing intervals shall not exceed one (1) year and overhaul intervals shall not exceed (5) years.

- (a) Certified Tester/Repair Technicians. All certified tester/repair technicians shall be re-certified as tester/repair technicians at the time of the adoption of this ordinance shall continue to be certified for a period of not more than three (3) years as determined by the City Manager.