

**TITLE 11**  
**DEPARTMENT OF HEALTH**  
**CHAPTER 21**  
**CROSS CONNECTION AND BACKFLOW CONTROL**

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Historical Note: Chapter 21 of Title 11 Administrative Rules, is based substantially upon Chapter 22 of the Public Health Regulations, Department of Health. [Eff. 12/04/48; R 12/26/81]

**§11-21-1 Purpose.**

(a) To protect the public water systems from the possibility of contamination or pollution by isolating within its customers' internal distrib

backflow or backsiphon into the public water systems.

(b) To promote the elimination or control of existing cross-connections, actual or potential, between its customers' in-plant potable water system(s) and non-potable water systems, plumbing fixtures and industrial piping 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 all potable water systems. [Eff. 12/26/81] (Auth: HRS §§340E-2, 340E-9) (Imp: HRS §§340E-2, 340E-9)

**§11-21-2 Definitions.**

As used in this chapter:

"Agency" means the department of health, State of Hawaii, and vested with the authority and responsibility for the enactment and enforcement of this ordinance.

"Airgap" 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. The vertical distance shall be at least double the diameter of the supply pipe above the flood-level rim and in no case shall the gap be less than one inch.

"Approved" means accepted by the department of health and water purveyor as meeting the applicable specifications stated or cited in this ordinance, or as suitable for the proposed use.

"Backflow" means the flow of water or other liquids, mixtures, or substances into the distributing pipes of a potable supply of water from any source or sources other than its intended source. Backsiphonage is one type of backflow.

"Backflow Preventor" means a device or means to prevent backflow into the potable water system.

"Back Pressure" means backflow caused by a pump, elevated tank, boiler or other means that could create pressure within the system greater than the supply pressure.

"Backsiphonage" means the flow of water or other liquids, mixtures or substances into the distribution pipes of a potable water supply system from any source other than its intended source caused by the sudden reduction of pressure in the potable water supply system.

"Certified Tester" means three classes of certified testers: 1) a limited tester has been trained and is qualified to perform periodic testing, inspection, and repairs on the specific devices contained within a specific plant or institution. This person is usually an employee of the plant or institution and has been assigned the duty of taking care of the backflow prevention equipment as part of his overall plant duties, and does not extend to backflow prevention devices that are not part of the specific plant or institution; 2) a general tester has been trained and is qualified to perform the periodic testing, inspection, and repairs on all devices that are on the market. This person may be an employee of a water agency, an employee of a municipal agency, or an individual operating a backflow device testing service; and 3) a manufacturer's agent is an employee of a manufacturer of backflow prevention equipment and is thoroughly familiar with the backflow prevention devices produced by his employer. This person may be familiar with other makes and models of backflow prevention devices but is restricted to only his employer's products.

"Check Valve" means a self-closing device which is designed to permit the flow of fluids in one direction and to close if there is a reversal of flow.

"Community Water System" means a public water system which serves at least fifteen service connections used year-round residents or regularly serves at least twenty-five year-round residents.

"Contamination" means an impairment of the quality of the potable water by sewage, industrial fluids or waste liquids, compounds or other materials to a degree which creates an actual hazard to the public health through poisoning or through the spread of disease.

"Critical Level" means the critical level C-L or C/L marking on a backflow prevention device or vacuum breaker which is a point conforming to approved standards and established by the testing laboratory (usually stamped on the device by the manufacturer), which determines the minimum elevation above the flood-level rim of the fixture or receptacle served at

which the device may be installed. When a backflow prevention device does not bear a critical level marking, the bottom of the vacuum breaker, combination valve, or the bottom of any such approved device shall constitute the critical level.

"Cross-Connection" means any physical arrangement whereby a public water supply is connected, directly or indirectly, with any other water supply system, sewer, drain, conduit, pool, storage reservoir, plumbing fixture, or other device which contains, or may contain, contaminated water, sewage, or other waste or liquid of unknown or unsafe quality which may be capable of imparting contamination to the public water supply as a result of backflow. Bypass arrangements, jumper connections, removable sections, swivel or changeover devices, and other temporary or permanent devices in which, or because of which, backflow could occur are considered to be cross-connections.

"Director" means the director of health of the department of health, State of Hawaii, or his duly authorized representative.

"Flood-Level Rim" means the edge of the receptacle from which water overflows.

"Hazard, Health" means any condition, device, or practice in the water supply system and its operation which create, or in the judgment of the director may create, a danger to the health and well-being of the water consumer. An example of a health hazard is a structural defect in the water supply system, whether of location, design, or construction, that regularly or occasionally may prevent satisfactory purification of the water supply or cause it to be polluted from extraneous sources.

"Non-Community Water System" means a public water system that is not a community water system.

"Non-Potable Water" means water that is not safe for human consumption or that is of questionable potability.

"Pollution" means the presence of any foreign substance (organic, inorganic, radiological or biological) in water that may degrade the water quality so as to constitute a hazard or impair its usefulness.

"Potable Water" means water free from impurities in amounts sufficient to cause disease or harmful physiological effects. The bacteriological, chemical, and radiological quality shall conform with Administrative Rule Systems."

"Public Water System" means a system for the provision to the public of piped water for human consumption, if such system has at least fifteen service connections or regularly serves an average of at least twenty-five individuals daily at least sixty days out of the year. Such term includes (1) any collection, treatment, storage, and distribution facilities under control of the operator of such system and used primarily in connection with such system, and (2) any collection of pretreatment storage facilities not under such control which are used primarily in connection with such system. A public water system is either a "community water system" or a "non-community water system."

"Secondary Water System" means any water supply in a building or premise maintained in addition to a public water system. Such secondary water system shall include any system, other than the public water supply, supplying surface water from streams, rivers, lakes, ponds, lagoons, reservoirs and cisterns, and groundwater from both deep and shallow sources; also, any supply of public water system which has been stored, held, reserved, treated, and processed in a manner which may detract from the potability of the water by either bacterial, chemical, or radiological nature.

"Submerged Inlet" means a water pipe or extension thereto from a public water supply terminating in a tank, vessel, fixture or appliance which may contain water of questionable quality, waste or other contaminant and which is unprotected against backflow.

"Vacuum" means any pressure less than that exerted by the atmosphere.

"Vacuum Breaker, Atmospheric Nonpressure Type" means a vacuum breaker designed so as not to be subjected static line pressure or installed where it would be under pressure for not more than twelve hours in any twenty-four hour period.

"Vacuum Breaker, Pressure Type" means a vacuum breaker de conditions of static line pressure.

"Water-Service Connection" means the terminal end of a service connection from the public potable water system; i.e., where the water purveyor loses jurisdiction and sanitary control over the water at its point of delivery to the customer's water system. If a meter is installed at the end of the service connection, then the service connection shall r downstream end of the meter. There shall be no unprotected tackoffs from the service line ahead of any meter or backflow prevention device located at the point of delivery to the customer's water system. Service connection shall also include water service connection from a fire hydrant and all other temporary or emergency water service connections from the public potable water system. [Eff. 12/26/81; Am ] (Auth: HRS §§340E-2, 340E-9) (Imp: HRS §§340E-2, 340E-9)

### **§11-21-3 Right to inspect.**

The director shall be allowed to enter any building or premise at any reasonable hour and be permitted to inspe reinspect the plumbing facilities for cross-connections or other structural or sanitary hazards, including violations of these regulations. When such a condition becomes known, the director shall inform the water supplier to immediately discontinue service to the premise by providing for a physical break in the service line until the customer has corrected the condition(s). [Eff. 12/26/81] (Auth: HRS §§340E-2, 340E-9) (Imp: HRS §§340E-2, 340E-9)

### **§11-21-4 Approval of devices.**

Before any backflow prevention device is installed, the device shall be manufactured in full conformance with the standards established by the American Water Works Association--AWWA--C506-78 and have met completely tl laboratory and field performance specification of the Foundation for Cross-Connection Control and Hydraulic Research of the University of Southern California--FCCC and HR. The director may accept standards and testing results from other acceptable laboratories when it becomes necessary. [Eff. 12/26/81] (Auth: HRS §§340E-2, 340E-9) (Imp: HRS §§340E-2, 340E-9)

### **§11-21-5 Installation and location.**

The backflow prevention device shall be installed on the consumer side of the property line and as close to the water meter where applicable as physically possible. Connections or tees between the meter where applicable and the backflow prevention device will not be permitted without approval from the director. A backflow prevention device shall not be installed underground or in a vault without written approval by the director. Installation dimension for backflow prevention devices shall conform to the following table:

SIZE OF DEVICE	DIMENSION		DIMENSION
	GROUND LEVEL TO CENTERLINE OF BACKFLOW PREVENTION DEVICE		DISTANCE TO SURROUNDING OBSTRUCTIONS

	Minimum	Maximum	
3/4" to 1-1/2"	18"	48"	24"
2" to 3"	24"	48"	24"
4" to 6"	30"	48"	24"
8" to 10"	36"	48"	24"

In all cases, the backflow prevention device shall be installed according to the backflow preventor manufacturer's directions and in an easily accessible location [Eff. 12/26/81] (Auth: HRS §§340E-2, 340E-9) (Imp: HRS §§340E-2, 340E-9)

**§11-21-6 Existing cross-connections.**

Within a reasonable time following the adoption of this regulation, existing cross-connections between a public water system and any secondary water system shall be eliminated or protected by means of an approved backflow preventor. [Eff. 12/26/81] (Auth: HRS §§340E-2, 340E-9) (Imp: HRS §§340E-2, 340E-9)

### **§11-21-7 Irrigation systems.**

(a) The following guidelines relating to backflow prevention devices for irrigation systems shall apply:

(1) Atmospheric vacuum breakers shall be installed after the last control valve of each sprinkler circuit and at a minimum of six inches above the highest irrigation head. The atmospheric vacuum breaker shall be installed only on irrigation circuits with heads that will not return any pressure in the circuit when the circuit control valve is closed.

(2) Pressure vacuum breakers shall be installed at the beginning of each irrigation circuit and at a minimum of twelve inches above the highest irrigation head on the circuit. Individual irrigation circuits having quick coupling valves or other similar type heads that will permit pressure to be retained in the circuit shall have a pressure vacuum breaker installed as a minimum requirement for each circuit. Irrigation systems using the subsurface drip method shall have a pressure vacuum breaker on each circuit. A pressure vacuum breaker may not be installed where a double check valve assembly, reduced pressure principle backflow prevention device, or air gap separation is required.

(3) A double check valve assembly may be installed to serve multiple irrigation circuits in lieu of vacuum breakers on each individual irrigation circuit.

(4) A reduced pressure principal backflow preventor or air gap separation shall be required before any piping network in which fertilizers, pesticides and other chemicals or toxic contaminants are injected or siphoned into the irrigation system. [Eff. 12/26/81] (Auth: HRS §§340E-2, 340E-9) (Imp: HRS §§340E-2, 340E-9)

### **§11-21-8 Maintenance requirements.**

(a) It shall be the responsibility of water users to maintain all backflow preventors and vacuum breakers within the building or on the premises in good working order. No piping or other arrangement for the purpose of bypassing backflow devices shall be permitted.

(b) Periodic testing and inspection schedule shall be established by the director for all backflow preventors in intervals between such testing, inspection and overhauls of each devices shall be established in accordance with age and condition of the backflow prevention device. Inspection intervals should not exceed one year. Backflow prevention devices should be inspected frequently after initial installation to assure that the devices are properly installed and debris resulting from the installation has not interfered with the functioning of the device. The inspection and testing shall be performed by a certified tester approved by the director. In those instances where the director deems the hazard to be great, inspections may be required at more frequent intervals. Records of any tests, repairs and overhauls shall be kept and made on forms prescribed by the director. Should the water user fail to make the proper test and provide all records on the test, the director at his discretion may perform the necessary test, needed repairs, and replacements and charge the cost thereof to the water consumer. [Eff. 12/26/81] (Auth: HRS §§340E-2, 340E-9) (Imp: HRS §§340E-2, 340E-9)

§11-21-9 Violations and penalties. (a) The director shall notify the owner, or authorized agent of the owner, of the building or premise in which there is found a violation(s) of these regulations. The director shall set a specific time for the owner to have the violation(s) removed or corrected. If the owner fails to correct the violation(s) in the specified time, the director may, if in his judgment an imminent health hazard exists, request that the water service to the building or premise be terminated. Additional fines or penalties may also be invoked following termination of service.

(b) The owner or authorized agent of the owner responsible for the maintenance of the plumbing system in the building who knowingly permits a violation to remain uncorrected after the specified time set by the director, shall, upon conviction thereof by the court, be required to pay a fine of not more than \$500.00 or by imprisonment in jail for a period of time not to exceed one year, or both such fine and imprisonment. [Eff. 12/26/81] (Auth: HRS §§340E-2, 340E-8, 340E-9) (Imp: HRS §§340E-2, 340E-7, 340E-8)

§11-21-10 Effect of county government ordinances. When a county government has adopted an ordinance governing cross-connection and backflow prevention, and the provisions of the ordinance and the methods of enforcement by the county government are approved in writing by the director, said ordinance, and not these regulations, shall control the matter of cross-connection and backflow prevention in such county. [Eff. 12/26/81] (Auth: HRS §§340E-2, 340E-9) (Imp: HRS §§340E-2, 340E-9)

§11-21-11 Severability. If any provision of this chapter, or its application to any person or circumstance is held invalid, the application of such provision to other persons or circumstances, and the remainder of this chapter, shall not be affected thereby. [Eff. 12/26/81] (Auth: HRS §§340E-2, 340E-9) (Imp: HRS §§340E-2, 340E-9)