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SUBJECT: *Backflow Preventers for Potable Water Systems*

This bulletin has been jointly developed by Safety Services and the Plumbing Technical Council to inform the plumbing industry of the minimum requirements associated with the installation of ***Backflow Preventers in a Plumbing System***.

Designers, Contractors and Safety Codes Officers are reminded that water distribution systems require a means of protection from substances that could render the system non-potable. This is to reduce the probability that, potable water will become contaminated, exposing the public to an unacceptable health risks. **Backflow Preventers** shall be so located in the water distribution system to prevent contaminants entering the public and private potable water system.

The design and installation of *backflow* protection shall be located to accommodate protection of the potable water system in accordance with the current **National Plumbing Code of Canada (NPC)** as adopted with the most recent **Plumbing Code Regulation**.

2.6.2.1. Connection of Systems

- 1) Except as provided in Sentence (2), connections to *potable water systems* shall be designed and installed so that non-*potable* water or substances that may render the water non-*potable* cannot enter the system.
- 2) A water treatment device or apparatus shall not be installed unless it can be demonstrated that the device or apparatus will not introduce substances into the system that may endanger health.
- 3) ***Backflow preventers*** shall be selected and installed in conformance with **CAN/CSA-B64.10**,
“Selection and Installation of Backflow Prevention Devices.”

2.6.2.2. Back-Siphonage

- 1) *Potable* water connections to *fixtures*, tanks, vats or other devices not subject to pressure above atmospheric and containing other than *potable* water shall be installed so as to prevent *back-siphonage* in conformance with Sentence (2).
- 2) Except as provided in Sentence 2.6.2.10.(2), *back-siphonage* shall be prevented by the installation of
 - a) an *air gap*,
 - b) an atmospheric *vacuum breaker*,
 - c) a pressure *vacuum breaker*,
 - d) a hose connection *vacuum breaker*,
 - e) a dual *check valve backflow preventer* with atmospheric port,
 - f) a double *check valve* assembly,
 - g) a reduced pressure principle *backflow preventer*,
 - h) a dual *check valve backflow preventer*,
 - i) a laboratory faucet type *vacuum breaker*, or
 - j) a dual *check valve backflow preventer* with vent.

2.6.2.3. Backflow Caused by Back Pressure

- 1) *Potable* water connections to *fixtures*, tanks, vats, boilers or other devices containing other than *potable* water and subject to pressure above atmospheric shall be arranged to prevent *backflow* caused by *back pressure* in conformance with Sentences (2) and (3).
- 2) Except as provided in Article 2.6.2.4., *backflow* caused by *back pressure* of non-toxic substances into a *potable water system* shall be prevented by the installation of
 - a) an *air gap*,
 - b) a dual *check valve backflow preventer* with atmospheric port,
 - c) a dual *check valve backflow preventer*,
 - d) a dual *check valve backflow preventer* with vent,
 - e) a double *check valve* assembly, or
 - f) a reduced pressure principle *backflow preventer*.
- 3) *Backflow* caused by *back pressure* of toxic substances into a *potable water system* shall be prevented by the installation of
 - a) an *air gap*, or
 - b) a reduced pressure principle *backflow preventer*.

2.6.2.4. Backflow from Fire Protection Systems (Alberta Amendment)

- (1) A backflow preventer shall not be required in *residential full flow-through fire sprinkler/standpipe systems* in which the pipes and fittings are constructed of *potable water system materials*.
- (2) Backflow caused by back-siphonage or back pressure from fire sprinkler systems where water treatment is not added shall be prevented by the installation of not less than an Approved Double Check Valve Assembly, and such a device shall not adversely affect the designed performance of the system.

- (3) Backflow caused by back-siphonage or back pressure from standpipe systems where water treatment is not added shall be prevented by the installation of not less than an Approved Double Check Valve Assembly, and such a device shall not adversely affect the designed performance of the system.

Backflow caused by backsiphonage or backpressure from a sprinkler/standpipe system where treatment is added shall follow the requirements listed in the CSA B64.10 Manual for the Selection and Installation of Backflow Prevention Devices Standard.

2.6.1.11. Thermal Expansion

- 1) Protection against thermal expansion shall be required when a *check valve* is required by Article 2.6.1.5., a **backflow preventer** by Article 2.6.2.6., or a pressure-reducing valve by Article 2.6.3.3.

CAN/CSA B64-10, "Selection and Installation of Backflow Prevention Devices"

has a comprehensive list of various backflow preventers that are used either as premises isolation, zone or area isolation and/or point of use isolation. The following are a few of the requirements listed in this Standard.

- Backflow preventers shall be installed in a readily accessible location where they can be reached for servicing and inspection without requiring the climbing over or removal of an obstacle or the use of a portable ladder.
- Backflow preventers shall be tested upon installation.

Protection of the potable water system shall be accomplished by premises isolation, zone or area isolation, and point of use control.

- Premises isolation shall be provided by the installation of a reduced pressure principle backflow preventer (RP) on all water systems where a potentially severe hazard may be caused by backflow. Buildings or facilities that shall be isolated from the potable water supply by RP backflow preventer include the following:
 - chemical or plating plants;
 - commercial laundries;
 - food and beverage processing plants;
 - hospitals, operating, laboratory, or mortuary facilities;
 - petroleum processing and storage facilities;
 - plants using radioactive material;
 - premises where access is restricted;
 - trackside facilities for trains;
 - sewage treatment plants;
 - steam plants.
- Premises isolation for all other water services shall be provided when required by a cross-connection control program (CCCP).
- Note: The regulatory authority generally enforces a CCCP through the enactment of a bylaw.

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- Premises isolation from the potable water supply by a dual check backflow preventer shall include:
 - residential premises with access to an auxiliary water supply (not directly connected);
 - residential premises serving fewer than four dwelling units with a single water service;
 - buildings with a minor hazard classification.
 - Premises isolation from the potable water supply by a double check valve assembly shall include:
 - buildings with moderate hazard classification;
 - apartment or office buildings;
 - multi-service interconnected facilities;
 - schools and colleges;
 - multi-tenant single service facilities;
 - shopping malls.

Other buildings and facilities that require premises isolation can be found in Table B-2 of the Standard. Table B-1 of the Standard has an extensive list of fixtures and plumbing equipment associated with its degree of hazard.

The National Plumbing Code 2010 may be obtained from:

<http://www.nrc-cnrc.gc.ca/eng/ibp/irc/codes/2010-national-plumbing-code.html>

CAN/CSA B64-10-07 may be obtained from:

Canadian Standards Association

Ph. 1-800-463-6727

Fax (780) 462-5322

<http://shop.csa.ca/>

The purpose of this notice is to ensure that **Designers** and **Installers** are aware that provisions in the **Alberta Plumbing Regulation, National Plumbing Code** and **CAN/CSA B64 Standard** must be used for the Selection and Installation of *Backflow Preventers*. The objectives of these requirements are to limit the probability that a person will become ill from consumption of contaminated water.