

Annex B (informative)

Guide to the assessment of hazards

Note: This Annex is not a mandatory part of this Standard.

B.1

To protect the municipal and private potable water supply systems from contamination, the authority administering the local cross-connection control program has several options available when determining the location of backflow preventers within industrial, commercial, and residential premises:

- The first option is based on a containment theory according to which backflow protection is installed on the incoming service, providing premises isolation that utilizes a minimum number of backflow preventers to isolate the municipal potable water system from the private system, but that does not protect the consumer from the source of contamination via internal cross-connections.
- The second option is based on internal protection: backflow preventers are either installed on individual water usages or zones of usage. This approach protects the private potable water system from internal contamination, but does not adequately protect the municipal potable water system, because of the complexity of the plumbing system (e.g., plumbing modifications and occupancy changes) that are inherent in industrial, commercial, or residential developments.
- The third option is based on combining premises, zone, and individual protection to ensure that both the public and private potable water supply systems are protected from contamination.

B.2

Tables [B.1](#) and [B.2](#) are a guide to the degree of hazard, but do not provide a complete list of potential hazards.

Table B.1
Guide to degree of hazard — Point of use cross-connections
(See Clauses [5.4.1](#) and [B.2](#).)

Source of pollution or contamination	Degree of hazard
Agricultural chemical (sprayer)	Severe
Air compressor oil cooler	Moderate
Animal watering	Moderate
Aspirator (non-toxic)	Moderate
Aspirator (toxic)	Severe
Autoclave	Severe
Autopsy and mortuary equipment	Severe
Auxiliary water supply	Severe
Baptistery	Moderate
Basin	Moderate

(Continued)

Table B.1 (Continued)

Source of pollution or contamination	Degree of hazard
Bathtub (all)	Moderate
Bedpan washer	Severe
Beverage dispensing equipment (no carbonator)	Minor
Beverage dispensing equipment (with carbonator)	Moderate
Bidet	Moderate to severe
Bottle washer	Moderate to severe
Bread making equipment	Minor to moderate
Canopy washers	Severe
Carwash	Severe
Chemical feed tank	Severe
Chiller tank (closed, no chemicals)	Moderate to severe
Chiller tank (open or with chemicals)	Severe
Chlorinator	Severe
Clothes washer (residential)	Moderate
Condensate tank	Severe
Condensate tank (top feed)	Moderate
Cooking kettle (for food only)	Minor
Cooling condenser, AC unit (solenoid downstream)	Severe
Cooling condenser, AC unit (solenoid upstream)	Minor
Cooling tower	Severe
Cuspidor	Severe
De-aerator (bottom feed)	Severe
De-aerator (top feed)	Moderate
Degreasing equipment	Severe
Dental delivery system (water supply)	Minor
Dental vacuum pump	Severe
Detergent dispenser	Severe
Dipper well in ice cream parlour or restaurant	Moderate
Dish rinse unit with flex hose	Moderate
Dishwasher (commercial)	Moderate

(Continued)

Table B.1 (Continued)

Source of pollution or contamination	Degree of hazard
Dishwasher (residential)	Moderate
Distiller	Minor
Dockside marine facility	Severe
Emergency eyewash/shower	Eyewash/shower to be installed upstream of the zone isolation
Flexible shower head with hose	Minor to severe
Floor drain with flushing rim	Severe
Flush tank	Moderate
Flushing equipment device	Severe
Flushometer	Severe
Fountain, ornamental	Moderate to severe
Fountain, ornamental (chemicals added)	Severe
Fume hood	Severe
Garbage can washer	Severe
Garbage disposal unit	Severe
Heat exchanger (see Annex F and Clause 5.10)	Minor to severe
Hose connection (other than residential)	Moderate to severe
Hose connection (residential)	Minor to moderate
Hospital (active treatment area)	Severe
Hospital (non-treatment area)	Moderate
Hot tub or spa	Moderate
Hot water systems (all types — direct heating of water supply) (see Annex F and Clause 5.10)	Minor
Humidifier	Moderate
Humidifier with sump (chemicals added)	Severe
Hydrotherapy bath	Moderate
Ice machine for commercial restaurant	Moderate to severe
Ice making equipment for sports arena	Severe
Industrial fluid system	Severe
Irrigation system (chemicals injected)	Severe
Irrigation system (no chemicals injected)	Moderate

(Continued)

Table B.1 (Continued)

Source of pollution or contamination	Degree of hazard
Lab bench equipment (non-toxic)	Minor
Lab bench equipment (toxic)	Severe
Lab faucet	Moderate to severe
Laboratory	Severe
Laundry machine	Moderate
Lavatory	Moderate
Lethal substance	Severe
Livestock equipment	Severe
Mixing tee with steam and water	Moderate
Mortuary or morgue	Severe
Non-potable water	Severe
Optician or ophthalmology equipment	Minor to moderate
Pedicure chair	Moderate to severe
Photo lab sink	Severe
Pipette washer	Severe
Piping to chemical dispensers	Minor to severe
Plating tank	Severe
Potato peeler	Moderate
Poultry barn	Severe
Pressure washer (no aspirator)	Minor
Pressure washer (with aspirator)	Severe
Private fire hydrants	Moderate
Private water source	Severe
Pump primer line (non-toxic)	Moderate
Pump primer line (toxic)	Severe
Radiator flushing equipment	Severe
Restricted area	Severe
Residential reverse osmosis equipment	Minor
Reverse osmosis equipment with backwashing	Moderate
Reverse osmosis equipment with chemical cleaning	Severe

(Continued)

Table B.1 (Continued)

Source of pollution or contamination	Degree of hazard
Serrated faucets	Severe
Sewage ejectors	Severe
Sewage pump	Severe
Shampoo sinks	Moderate
Sizing vats	Severe
Solar hot water systems (residential — no chemicals added) (see Annex F and Clause 5.10)	Minor to moderate
Solar hot water systems (residential — relatively harmless heat-transfer fluid) (see Annexes F , G and Clause 5.10)	Minor to moderate
Solar hot water systems (residential — toxic heat-transfer fluid) (see Annexes F , G and Clause 5.10)	Severe
Solar hot water systems (commercial — single wall heat exchangers) (see Annex F and Clause 5.10)	Moderate to severe
Solar hot water systems (all types — double walled heat exchangers) (see Annex F and Clause 5.10)	Minor
Solar hot water systems (make-up water connection to the heat-transfer fluid piping loop) (see Annex F and Clause 5.10)	Minor to severe
Solution tanks	Severe
Spa or hot tub	Moderate
Specimen tank	Severe
Steam boiler	Severe
Steam cleaner	Moderate
Steam generator	Moderate
Steam table	Minor to moderate
Sterilizer (condensate cooling only)	Moderate
Sterilizer (connection into chamber)	Severe
Still	Minor
Swimming pool (direct connection)	Moderate
Swimming pool (other than residential)	Moderate
Swimming pool (residential)	Minor
Swimming pool makeup tank	Moderate
Teeth cleaning equipment (veterinary type)	Moderate
Trap primer	Severe

(Continued)

Table B.1 (Concluded)

Source of pollution or contamination	Degree of hazard
Vending machine with no carbonators	Minor
Wash rack	Severe
Wash tank	Moderate
Wash tanks (toxic)	Severe
Water closet (flushometer type)	Moderate
Water closet (tank type)	Moderate
Water hauling equipment (see Annex C)	Severe
Water softener (residential)	Minor
Water softener drain (residential)	Moderate
Wok table (for Oriental cooking) with submerged inlet	Moderate
X-ray equipment	Severe

Table B.2
Guide to degree of hazard — Premises
 (See Clauses [5.3.1.2](#), [5.3.4.2](#), [5.3.4.3](#), and [B.2](#).)

Type of building or facility	Degree of hazard
Airport	Moderate
Animal feed lot	Moderate to severe
Animal stock yard	Moderate to severe
Apartment building	Moderate
Aquaculture farm	Severe
Aquarium (public)	Severe
Arena	Moderate
Asphalt plant	Severe
Auto body shop	Severe
Auto dealership	Moderate
Automotive repair	Severe
Automotive repair shop	Severe
Beverage processing plant (includes distillery and brewery)	Severe
Blood clinic	Severe
Campsite	Moderate

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Table B.2 (Continued)

Type of building or facility	Degree of hazard
Campsite with RV hook-ups or dump-stations	Severe
Carwash	Severe
Chemical plant	Severe
Church	Minor to moderate
College	Moderate
Commercial premises	Moderate to severe
Concrete plant	Severe
Dental office	Moderate
Dental surgery facility	Severe
Dock and marine facility	Severe
Dry cleaning plant	Severe
Duplex housing with shared service	Minor
Dye plant	Severe
Exhibition ground	Severe
Farm	Moderate to severe
Film processing facility	Severe
Fire station	Moderate to severe
Fish farms or hatchery	Severe
Food processing plant	Severe
Fuel dispensing facility	Moderate
Funeral home	Moderate to severe
Garbage transfer facility	Severe
Golf course	Moderate to severe
Grocer	Moderate
Hair salon	Moderate
Hospital	Severe
Hotel	Moderate
Industrial and institutional premises	Moderate to severe
Kennel	Moderate
Laboratory	Severe
Laundry (commercial)	Severe

(Continued)

Table B.2 (Continued)

Type of building or facility	Degree of hazard
Laundry (commercial, coin-operated)	Moderate
Manufacturing plant (not specified)	Moderate
Marina (pleasure-boat)	Moderate to severe
Meat packing plant	Severe
Medical clinic (non surgical)	Moderate
Medical clinic (surgical)	Severe
Milk processing plant	Severe
Mining facility	Severe
Mobile home park	Moderate
Mortuary or morgue	Severe
Motel	Moderate
Motorcycle repair facility	Severe
Multi-service interconnected facility	Moderate
Multi-tenant single-service facility	Moderate
Nursing home	Moderate
Office building	Moderate
Oil refinery	Severe
Paint manufacturing plant	Severe
Penitentiary	Moderate
Petroleum processing or storage facility	Severe
Pharmaceutical manufacturing facility	Severe
Photo processing facility	Severe
Plants using radioactive material	Severe
Plastic manufacturing plant	Severe
Plating shop and plant	Severe
Poultry farm	Severe
Power generating facility	Severe
Premises where access is prohibited or restricted	Severe
Printing plant	Severe
Pulp and/or paper plant	Severe

(Continued)

Table B.2 (Concluded)

Type of building or facility	Degree of hazard
Radiator shop	Severe
Recycling facility	Severe
Refinery, petroleum processing	Severe
Rendering facility	Severe
Research building	Severe
Residential premises	Minor
Restaurant	Moderate
School (elementary, junior high, and senior high)	Moderate
Sewage dump station	Severe
Sewage treatment plant	Severe
Shopping mall	Moderate
Steam plant	Severe
Steel manufacturing plant	Severe
Swimming pool facility	Moderate
Townhouse (shared services)	Minor
Trackside facility for trains	Severe
University	Moderate to severe
Veterinary clinic	Moderate to severe
Waste disposal plant	Moderate to severe
Wastewater facility	Severe
Wastewater pump station	Severe
Wastewater treatment plant	Severe
Water filling station	Severe
Water park	Moderate
Water treatment plant	Severe
Water treatment pump station	Severe
Zoo	Severe