CR 92-182

RULES CERTIFICATE

STATE OF WISCONSIN)
) SS
DEPT. OF INDUSTRY,)
LABOR & HUMAN RELATIONS)

TO ALL TO WHOM THESE PRESENTS SHALL COME, GREETINGS:

I, Carol Skornicka, Secretary of the Department of Industry, Labor and Human Relations, and custodian of the official records of said department, do hereby certify that the annexed rule(s) relating to cross connection control for water supply systems (Subject) were duly approved and adopted by this department on October 12, 1993 (Date).

I further certify that said copy has been compared by me with the original on file in the department and that the same is a true copy thereof, and of the whole of such original.

RECEIVED
OCT 12 1993
REVISOR OF STATUTES BUREAU

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the official seal of the department at 8:15 a.m. in the city of Madison, this 12th day of October A.D. 19 93.

Secretary

ADM-6056 (R 06/92)

2-1-94

ORDER OF ADOPTION

Pursuant to authority vested in the Department of Industry, Labor and Human Relations by section(s)

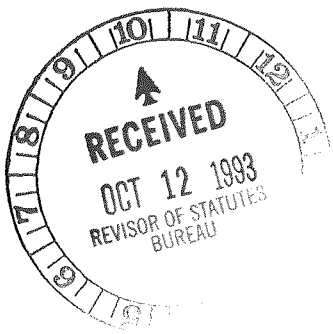
101.02 (1) and 145.02 (2),

Stats., the Department of Industry, Labor and Human Relations [X] creates; [X] amends;

[X] repeals and recreates; [X] repeals and adopts rules of Wisconsin Administrative Code chapter(s):

(Number)	(Title)
ILHR 81-87	Plumbing Code
ILHR 50-64	Building Heating Ventilation and Air Conditioning Code

The attached rules shall take effect on the first day of the month following publication in the Wisconsin Administrative Register pursuant to section 227.22, Stats.



Adopted at Madison, Wisconsin this

date: October 12, 1993

DEPARTMENT OF INDUSTRY, LABOR AND HUMAN RELATIONS

Secretary

State of Wisconsin \ Department of Industry, Labor and Human Relations

RULES in FINAL DRAFT FORM

Rule No.: Sections ILHR 82.41, 81.115, 51.21, 51.23, 2.62, 2.64

Relating to: Cross Connection Control for Water Supply Systems

Clearinghouse Rule No.: 92-182

The Wisconsin Department of Industry, Labor and Human Relations proposes an order to repeal ILHR 51.21 (4) (f) Note 3, ILHR 82.11 (7) and (8), 82.11 (15), 82.11 (52), Table 82.20-2 line 6, 82.21 (2) (a), and 82.50 (10) (f) and Table 25;

to renumber ILHR 82.20 (4) (e) Table 82.20-2 lines 7 to 10, 82.21 (2) (b) to (i), 82.30 (3) (c), 82.40 (8) (a), and Table 84.60-2 line 1;

to renumber and amend ILHR 82.20 (4) (d);

to amend ILHR 51.21 (4) (f) Note 1, 51.23 (7) (intro.), ILHR 81.13 (1), 81.15 (intro.), ILHR 82.11 (14), 82.20 (1) (intro.) and (a), Table 82.20-1, 82.20 (3), (4) (a) and (b), (4) (c) (intro.) and 1, 82.20 (5) (a) and (b), and ILHR 84.20 (5) (m) 6;

to repeal and recreate ILHR 2.64-1 line 16, ILHR 82.11 (5), 82.11 (16) to (18), 82.11 (55) and (56), 82.11 (126), 82.11 (165), 82.41, ILHR 84.30 (5) (c), and Table 84.60-4;

and to create ILHR 2.62 (1) (o), ILHR 51.21 (9), 51.23 (2) (c), 51.23 (10), ILHR 81.115, ILHR 82.11 (60m), (60n) and (62m), 82.11 (79m), (80m), (81m), (93m), (101m), (103m) and (117m), 82.11 (125m), (139m), (159t) and (161m), 82.11 (165m) and (178m), 82.20 (4) (d) 2, 82.21 (3), 82.30 (3) (c) 1, 82.40 (8) (a) 2, ILHR 84.20 (5) (1) 5, 84.30 (4) (g), and Table 84.60-2 line 1, relating to cross connection control for water supply systems.

* *

ANALYSIS OF RULES

Statutory authority: ss. 101.02 (1) and 145.02 (2), Stats.
Statutes interpreted: s. 145.02 (1), Stats.

Under s. 145.02, Stats., the Department of Industry, Labor and Human Relations has the responsibility of safeguarding public health and the waters of the state relative to the construction, installation and maintenance of plumbing. One mechanism of the Department to fulfill this responsibility has been the promulgation of the state plumbing code, chapters ILHR 81-87.

Chapter ILHR 82 of the plumbing code establishes minimum standards for the design, construction, installation, supervision and inspection of plumbing. In order for the plumbing code to be effective and reasonable, the standards must be updated periodically to reflect changing technologies and practices as well as new plumbing products. The current rules of section ILHR 82.41 dealing with cross connection control have not been reviewed and revised for 20 years. The proposed rules for cross connection control will address:

When cross connection control is required;

What minimum type of control is needed for various situations;

Installation parameters and limitations; and

How and when cross connection control devices are to be tested and maintained.

Although the proposed rules involve several of the department's codes, the focus of the rules is cross connection control. Specifically, the proposed rules will:

Provide a methodology to evaluate cross connection situations and to determine the minimum degree of control required;

Provide, under the proposed methodology, several alternatives to achieve cross connection control;

Require at least the use of a double check valve assembly as a means of cross connection control for automatic fire sprinkler systems with no additives in commercial applications;

Require periodic testing of certain types of cross connection control devices, reduced pressure backflow preventers, vacuum breakers, and double check valves;

Establish a registration program for individuals who are to test reduced pressure backflow preventers, pressure vacuum breakers, and double check valves;

Require the submission of plans for those projects where reduced pressure backflow preventers or pressure vacuum breakers are to be employed; and

Eliminate the current requirement for the submission of plans for turf sprinkler systems.

The proposed rules have been developed with the input of a citizen's advisory committee which was composed of representatives from various organizations, including plumbing contractors, designers, installers and plumbing products distributors.

SECTION 1. ILHR 2.62 (1) (o) is created to read:

ILHR 2.62 (1) (o) Cross connection control tester. The registration fee as a cross connection control tester shall be $90.00. The registration renewal fee as a cross connection control tester shall be:

1. $90.00, if the renewal application is made prior to the expiration of the registration; or

2. $100.00, if the renewal application is made after the expiration of the registration.

SECTION 2. ILHR 2.64 Table 2.64-1 line 16 is repealed and recreated to read:

Table 2.64-1
(partial)

Type of Review	Fee
16. Cross connection control devices:	
Reduced pressure principle backflow preventer . . .	$110.00 per device
Reduced pressure detector assembly backflow preventer .	$110.00 per device
Vacuum Breaker - anti-siphon, pressure type . . .	$110.00 per device

SECTION 3. ILHR 2.64 Table 2.64-1 line 19 is repealed.

SECTION 4. ILHR 51.21 (4) (f) Note 1 is amended to read:

ILHR 51.21 (4) (f) Note #1. The department will permit the domestic water supply system to serve class II standpipes ~~provided no intervening control valves are installed to interrupt the service of the standpipe and a check valve is installed to prevent contamination of the domestic water supply~~.

SECTION 5. ILHR 51.21 (4) (f) Note 3 is repealed.

SECTION 6. ILHR 51.21 (9) is created to read:

ILHR 51.21 (9) CROSS CONNECTION CONTROL. A standpipe system with a fire department connection and the standpipe system connecting to a domestic water supply system or to a municipal water main shall be protected against backflow conditions in accordance with s. ILHR 82.41. If a reduced pressure principle backflow preventer or a reduced pressure detector assembly backflow preventer is used as the type of cross connection control, plans for the device shall be submitted for review in accordance with s. ILHR 82.20 (1).

SECTION 7. ILHR 51.23 (2) (c) is created to read:

ILHR 51.23 (2) (c) The connection of an automatic fire sprinkler system to a municipal water main shall be protected against backflow conditions in accordance with s. ILHR 82.41.

1. If a reduced pressure principle backflow preventer or a reduced pressure detector assembly backflow preventer is used as the type of cross connection control, plans for the device shall be submitted for review in accordance with s. ILHR 82.20 (1).

2. Cross connection control devices shall be tested in accordance with s. ILHR 82.21 (3).

SECTION 8. ILHR 51.23 (7) (intro.) is amended to read:

ILHR 51.23 (7) PARTIAL AUTOMATIC FIRE SPRINKLER SYSTEMS. Partial automatic fire sprinkler systems may be connected without a fire department connection to the domestic water supply ~~service~~ system or a first-aid standpipe or a fire department standpipe provided all of the following conditions are satisfied:

SECTION 9. ILHR 51.23 (10) is created to read:

ILHR 51.23 (10) CROSS CONNECTION CONTROL. The connection of an automatic fire sprinkler system or a partial automatic fire sprinkler system to the domestic water supply system for a building shall be protected against backflow conditions in accordance with s. ILHR 82.41.

1. If a reduced pressure principle backflow preventer or a reduced pressure detector assembly backflow preventer is used as the type of cross connection control, plans for the device shall be submitted for review in accordance with s. ILHR 82.20 (1).

2. Cross connection control devices shall be tested in accordance with s. ILHR 82.21 (3).

SECTION 10. ILHR 81.115 is created to read:

ILHR 81.115 REGISTRATION OF CROSS CONNECTION CONTROL DEVICE TESTERS. (1) GENERAL. An individual who conducts a performance test of a cross connection control device as required by s. ILHR 82.21 (3) shall be registered by the department in accordance with this section.

(2) QUALIFICATIONS. An applicant for registration as a cross connection control device tester shall have completed at least 32 hours in an approved course or courses in the theory of cross connection control, the operation, testing, and maintenance of cross connection control devices, and the national standards for these cross connection control devices. The course or courses shall include instruction in at least:

(a) Reduced pressure principle backflow preventers;

(b) Reduced pressure detector assembly backflow preventers;

(c) Vacuum breakers - anti-siphon, pressure type;

(d) Double check detector assembly backflow preventers; and

(e) Double check backflow prevention assemblies.

(3) APPLICATIONS. (a) An application for registration as a cross connection control device tester shall be made on forms prescribed by the department.

Note: Registered tester applications are available from the Bureau of Building Water Systems, P.O. Box 7969, Madison, WI 53707.

(b) An application for a registered tester shall be accompanied by a fee as specified in s. ILHR 2.62 (1) (o).

(4) REVOCATIONS. Pursuant to s. ILHR 81.15 the department may suspend or cancel the registration as a cross connection control device tester.

(5) EXPIRATIONS. All registrations for cross connection control device testers shall expire 2 years from the date of issuance and shall be invalid after that date unless renewed.

(a) 1. The department shall send a renewal notice to each individual registered under this section.

2. A renewal notice shall be sent to the address given on the latest registration form on file with the department.

3. A registered tester shall be responsible for notifying the department of any change in his or her mailing address.

4. Failure to receive a notice for renewal shall not be considered as an excuse for failure to renew a registration.

(b) A tester registration may be renewed upon application and payment of a renewal fee as specified in s. ILHR 2.62 (1) (o).

(c) Whenever a person fails to renew a tester registration within 2 years after expiration, the department shall require evidence to show that the applicant for renewal is competent to perform the work of cross connection control tester before such a registration is renewed.

(6) SUNSET OF LISTED RP TESTERS. Individuals listed by the department to test reduced pressure principle backflow preventers prior to the effective date of this section may submit a renewal application for registration as a cross connection control device tester to the department. Failure to submit a completed renewal application within 6 months after the effective date of this section shall be considered as a surrender of the listing to conduct performance tests of cross connection control devices as required by s. ILHR 82.21 (3).

(a) 1. The department shall send a renewal notice to each individual listed as a RP tester.

2. A renewal notice shall be sent to the address of each listed RP tester on file with the department.

3. Failure to receive a notice of renewal shall not be considered as an excuse for failure to apply for registration as a cross connection control tester under this subsection.

(b) A RP tester listing may be renewed as cross connector control device tester registration upon application and payment of a renewal fee as specified in s. ILHR 2.62 (1) (o).

SECTION 11. ILHR 81.13 (1) (intro.) is amended to read:

ILHR 81.13 (1) ANNUAL NOTICE FOR RENEWAL OF LICENSES AND REGISTRATIONS. ~~Notice~~ Except as provided in s. ILHR 81.115 (5), notice for the renewal of licenses and registrations issued under this subchapter shall be sent to all licensees and registrants whose licenses or registration were in force during the previous year.

SECTION 12. ILHR 81.15 (intro.) is amended to read:

ILHR 81.15 SUSPENSION AND CANCELLATION OF REGISTRATIONS. The department may suspend or cancel the registration of any plumbing apprentice, registered learner, pipe layer, automatic fire sprinkler system apprentice, or cross connection control device tester, automatic fire sprinkler maintenance registration certificate or automatic fire sprinkler fitter maintenance registration certificate.

SECTION 13. ILHR 82.11 (5) is repealed and recreated to read:

ILHR 82.11 (5) "Air gap", in the water supply system, means the unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or faucet supplying water to a tank or plumbing fixture and the flood-level rim or spill level of the receptacle.

SECTION 14. ILHR 82.11 (7) and (8) are repealed.

SECTION 15. ILHR 82.11 (14) is amended to read:

ILHR 82.11 (14) "Backflow" means the unwanted reverse flow of liquids ~~in a piping system~~, solids or gases.

SECTION 16. ILHR 82.11 (15) is repealed.

SECTION 17. ILHR 82.11 (16) to (18) are repealed and recreated to read:

ILHR 82.11 (16) "Back pressure" means a pressure greater than the supply pressure which may cause backflow.

(17) "Backflow preventer with intermediate atmospheric vent" means a type of cross connection control device which consists of 2 independently acting check valves, internally force loaded to a normally closed position and separated by an intermediate chamber with a means for automatically venting to atmosphere, the venting means is internally force loaded to a normally open position.

(18) "Backsiphonage" means the creation of a backflow as a result of negative pressure.

SECTION 18. ILHR 82.11 (52) is repealed.

SECTION 19. ILHR 82.11 (55) and (55m) are repealed and recreated to read:

ILHR 82.11 (55) "Cross connection" means a connection or potential connection between any part of a water supply system and another environment containing substances in a manner that, under any circumstances, would allow the substances to enter the water supply system by means of backsiphonage or back pressure.

(55m) "Cross connection control device" means any mechanical device which automatically prevents backflow from a contaminated source into a potable water supply system.

SECTION 20. ILHR 82.11 (60m) and (60n) are created to read:

ILHR 82.11 (60m) "Double check backflow prevention assembly" means a type of cross connection control device which is composed of 2 independently acting check valves internally force loaded to a normally closed position, tightly closing shut-off valves located at each end of the assembly and fitted with test cocks.

(60n) "Double check detector assembly backflow preventer" means a type of a double check backflow prevention assembly which includes a parallel flow meter to indicate leakage or unauthorized use of water downstream of the assembly.

SECTION 21. ILHR 82.11 (79m), (80m), (81m), (89m), (93m), (101m), (103m) and (117m) are created to read:

ILHR 82.11 (79m) "Hand held shower" means a type of plumbing fixture which includes a cross connection control device, a hose and a hand held discharge piece such as a shower head or spray.

(80m) "High hazard" means a situation where the water supply system could be contaminated with a toxic solution.

(81m) "Hose connection vacuum breaker" means a type of cross connection control device which consists of a check valve member force loaded or biased to a closed position and an atmospheric vent valve or means force loaded or biased to an open position when the device is not under pressure.

(89m) "Laboratory faucet vacuum breaker" means a type of cross connection control device which consists of 2 independently acting check valves force loaded or biased to a closed position and between the check valves a means for automatically venting to atmosphere force loaded or biased to a open position.

(93m) "Low hazard" means a situation where the water supply system could be contaminated with a nontoxic solution.

(101m) "Negative pressure" means a pressure less than atmospheric.

(103m) "Nontoxic" means a probable human oral lethal dose of greater than 15 grams of solution per kilogram of body weight.

(117m) "Pressurized flushing device" means a device which uses the water supply to create a pressurized discharge to flush a fixture exclusive of gravity type flushing systems.

SECTION 22. ILHR 82.11 (125m) is created to read:

ILHR 82.11 (125m) "Reduced pressure detector assembly backflow preventer" means a type of reduced pressure principle type backflow preventer which includes a parallel flow meter to indicate leakage or unauthorized use of water downstream of the assembly.

SECTION 23. ILHR 82.11 (126) is repealed and recreated to read:

ILHR 82.11 (126) "Reduced pressure principle type backflow preventer" means a type of cross connection control device which contains 2 independently acting check valves, separated by an intermediate chamber or zone in which there is a hydraulically operated means for venting to atmosphere, and includes 2 shut-off valves and 4 test cocks.

SECTION 24. ILHR 82.11 (139m), (159t) and (161m) are created to read:

ILHR 82.11 (139m) "Spill level" means the horizontal plane to which water will rise to overflow through channels or connections which are not directly connected to any drainage system, when water is flowing into a fixture, vessel or receptacle at the maximum rate of flow.

(159t) "Toxic" means a probable human oral lethal dose of 15 or less grams of solution per kilogram of body weight.

(161m) "Trap seal primer" means a type of valve designed to supply water to the trap in order to provide and maintain the water seal of the trap.

SECTION 25. ILHR 82.11 (165) is repealed and recreated to read:

ILHR 82.11 (165) "Vacuum breaker, anti-siphon, pressure type" means a type of cross connection control device which consists of an independently operating internally loaded check valve and an independently operating loaded air inlet located on the discharge side of the check valve, a tightly closing shut-off valve located at each end of the assembly, and test cocks.

SECTION 26. ILHR 82.11 (165m) and (178m) are created to read:

ILHR 82.11 (165m) "Vacuum breaker, pipe applied atmospheric type" means a type of cross connection control device where the flow of water into the device causes a float to close an air inlet port and when the flow of water stops the float falls and forms a check valve against backsiphonage and at the same time opens the air inlet port to allow air to enter and satisfy the vacuum.

(179m) "Wall hydrant, frost proof automatic draining, anti-backflow type" means a type of device which is designed and constructed with anti-siphon and back pressure preventive capabilities and with means for automatic post shut-off draining to prevent freezing.

SECTION 27. ILHR 82.20 (1) (intro.), (a), and Table 82.20-1 are amended to read:

ILHR 82.20 (1) GENERAL. ~~Plumbing plans~~ Plans and specifications shall be submitted to the department or to an approved agent municipality for review in accordance with pars. (a) and (b).

(a) Department review. ~~Plumbing plans~~ Plans and specifications for the types of ~~plumbing~~ installations listed in Table 82.20-1 shall be submitted to the department for review, regardless of where the installation is to be located. Written approval for the ~~plumbing~~ plans shall be obtained prior to installation of the ~~plumbing~~ work.

Table 82.20-1

SUBMITTALS TO DEPARTMENT

Type of ~~Plumbing~~ Installation
1. All plumbing, new installations, additions and alterations, regardless of the number of plumbing fixtures involved, to be installed in health care facilities.
2 Plumbing, new installations, additions and alterations involving 6 or more plumbing fixtures, to be installed in buildings owned by a metropolitan or sanitary sewer district.[a]
3. Plumbing, new installations, additions and alterations involving 6 or more plumbing fixtures, to be installed in buildings owned by the state.[a]
4. Engineered plumbing systems.
5. Controlled roof drainage systems.
6. Reduced pressure ~~zone~~ principle backflow preventers and reduced pressure detector assembly backflow preventers.
7. Vacuum Breakers - anti-siphon, pressure type.

Note a: A water heater is to be counted as a plumbing fixture.

SECTION 28. ILHR 82.20 Table 82.20-2 line 6 is repealed.

(Note to reader: Line 6 of Table 82.20-2 required the submission of turf sprinkler systems connected to potable water systems.)

SECTION 29. ILHR 82.20 Table 82.20-2 lines 7 to 10 are renumbered lines 6 to 9.

SECTION 30. ILHR 82.20 (3), (4) (a) and (b), and (4) (c) (intro.) and 1 are amended to read:

ILHR 82.20 (3) PRIORITY PLAN REVIEW. An appointment may be made with the department to facilitate the examination of ~~plumbing~~ plans in less than the normal processing time. Complete ~~plumbing~~ plans along with the fee specified in s. ~~Ind 69.23 (1) (d)~~ ILHR 2.61 (3), shall be submitted to the department ~~in person by appointment~~. The plans shall comply with all of the provisions of this section.

(4) PLANS AND SPECIFICATIONS. (a) At least 2 sets of ~~plumbing~~ plans and one copy of specifications which are clear, legible and permanent copies shall be submitted for examination and approval.

(b) If a submitter wants more than 2 sets of approved plans returned, the fees specified in s. ~~Ind 69.23~~ ILHR 2.64 shall accompany the plan submittal.

(c) All plans submitted for approval shall be accompanied by sufficient data and information for the department to judge if the ~~plumbing~~ installation and its performance will meet the requirements of this chapter and ch. ILHR 84.

1. Information to accompany the plans shall include the location or address of the ~~plumbing~~ installation and the name of the owner.

SECTION 31. ILHR 82.20 (4) (d) is renumbered 82.20 (4) (d) 1 a and as renumbered is amended to read:

ILHR 82.20 (4) (d) 1. a. Except as provided in ~~par. (e)~~ subpar. b, ~~all~~ plumbing plans and specifications shall be sealed or stamped and shall be signed by a Wisconsin registered architect, engineer or plumbing designer in accordance with ch. A-E 1.

SECTION 32. ILHR 82.20 (4) (e) is renumbered 82.20 (4) (d) 1 b.

SECTION 33. ILHR 82.20 (4) (d) 2 is created to read:

ILHR 82.20 (4) (d) 2. Automatic fire sprinkler plans and specifications for cross connection control shall be:

a. Signed and sealed in accordance with s. A-E 1.04 by an architect, engineer or sprinkler designer who is registered by the department of regulation and licensing; or

b. Signed, including license number, and dated by an automatic fire sprinkler contractor who is responsible for the installation of the sprinklers and who is licensed by the department of industry, labor and human relations.

SECTION 34. ILHR 82.20 (5) (a) and (b) are amended to read:

ILHR 82.20 (5) (a) Conditional approval. If, upon review, the department determines that the ~~plumbing~~ plans substantially conform to the provisions of chs. ILHR 82 to 84, a conditional approval, in writing, shall be granted. All noncode complying conditions stated in the conditional approval shall be corrected before or during installation.

(b) Denial of approval. If, upon review, the department determines that the ~~plumbing~~ plans do not substantially conform to the provisions of chs. ILHR 82 to 84, the request of conditional approval shall be denied in writing.

SECTION 35. ILHR 82.21 (2) (a) is repealed and 82.21 (2) (b) to (i) are renumbered 82.21 (2) (a) to (h).

SECTION 36. ILHR 82.21 (3) is created to read:

(3) MAINTENANCE AND TESTING OF CROSS CONNECTION CONTROL DEVICES. (a) All cross connection control devices shall be maintained in accordance with the appropriate standard.

(b) 1. A performance test shall be conducted for a reduced pressure principle backflow preventer, a reduced pressure detector assembly backflow preventer, a double check backflow prevention assembly, a double check detector assembly backflow preventer, and vacuum breaker - anti-siphon, pressure type:

a. At the time of installation;

b. Immediately after repairs or alterations to the device have occurred; and

c. At least annually.

2. a. The performance test for a reduced pressure principle backflow preventer shall be conducted in accordance with ASSE 5010-1013-1.

b. The performance test for a reduced pressure detector assembly backflow preventer shall be conducted in accordance with ASSE 5010-1047-1.

c. The performance test for a double check backflow prevention assembly shall be conducted in accordance with ASSE 5010-1015-1, 5010-1015-2, 5010-1015-3 or 5010-1015-4.

d. The performance test for a double check detector assembly backflow preventer shall be conducted in accordance with ASSE 5010-1048-1, 5010-1048-2, 5010-1048-3 or 5010-1048-4.

e. The performance test for a vacuum breaker - anti-siphon, pressure type shall be conducted in accordance with ASSE 5010-1020-1.

3. A performance test for a reduced pressure principle backflow preventer, a reduced pressure detector assembly, a double check backflow prevention assembly, a double check detector assembly backflow preventer, and vacuum breaker - anti-siphon, pressure type shall be conducted by an individual registered by the department in accordance with s. ILHR 81.115.

4. a. The results of a performance test for a reduced pressure principle backflow preventer, a reduced pressure detector assembly backflow preventer, and a vacuum breaker - anti-siphon pressure type, shall be forwarded to the department within 60 days of completion of the test.

Note: Performance test results are to be sent to:
Bureau of Building Water Systems
P.O. Box 7969
Madison, WI 53707

b. The results of performance tests for a reduced pressure principle backflow preventer, a reduced pressure detector assembly backflow preventer, and a vacuum breaker - anti-siphon pressure type, shall be recorded in a format prescribed by the department.

5. The results of performance tests for a double check backflow prevention assembly, and a double check detector assembly backflow preventer shall be maintained at the site where the device is installed and shall be made available upon request to the department or government entity exercising jurisdiction.

(c) The maintenance and performance testing requirements of this subsection shall also apply to those cross connection control devices installed prior to the effective date of this subsection.

SECTION 37. ILHR 82.40 (3) (c) is renumbered 82.40 (3) (c) 2.

SECTION 38. ILHR 82.40 (3) (c) 1 is created to read:

ILHR 82.40 (3) (c) 1. Pursuant to s. NR 811.09 (2) the interconnection of two or more water supply systems, one system served by a public supply source and the other system served by another supply source is prohibited, unless approved in writing by the department of natural resources.

SECTION 39. ILHR 82.40 (8) (a) is renumbered 82.40 (8) (a) 1.

Section 40. ILHR 82.40 (8) (a) 2 is created to read:

ILHR 82.40 (8) (a) 2. A hose bibb or a hydrant that penetrates an exterior wall of a heated structure shall be a frost proof and self-draining type.

Note: See s. ILHR 82.41 (4) (m) relative to cross connection control devices.

SECTION 41. ILHR 82.41 is repealed and recreated to read:

ILHR 82.41 CROSS CONNECTION CONTROL. (1) SCOPE. The provisions of this section set forth the requirements for the protection of potable water within water supply systems when and where there is the possibility of contamination due to cross connections or backflow conditions.

Note: The Department of Natural Resources governs the operation and design of community water systems and under s. NR 811.09 requires the supplier of water to develop and implement a comprehensive cross connection control program.

(2) MATERIALS. (a) All devices, assemblies and mechanisms intended to protect potable water supplies relative to cross connection or backflow shall be of a type recognized and approved in accordance with ch. ILHR 84.

(b) All methods including barometric loops and air gaps intended to protect potable water supplies relative to cross connection or backflow shall be constructed of materials suitable for water supply systems in accordance with ch. ILHR 84.

(3) GENERAL REQUIREMENTS. Potable water supply systems and the connection of each plumbing fixture, piece of equipment, appliance, or nonpotable water piping system thereto shall be designed, installed and maintained in such a manner to prevent the contamination of potable water supplies by means of cross connections.

(a) Types of cross connection control. 1. Potable water supply systems shall be protected against contamination due to cross connections or backflow conditions by one of the methods or devices specified in Table 82.41-1 depending upon the situation or Table 82.41-2 depending upon the specific application or use, and the limitations specified in sub. (4).

2. For the situations described in par. (b) 3, cross connection control shall be provided as part of the fixture outlet or in the water supply piping for the fixture outlet.

(b) Classifications. For the purposes of this section:

1. The designation of a high hazard or low hazard situation shall be determined on the basis of how a toxic or nontoxic solution is intended or recommended by the manufacturer of the solution to interface with the potable water supply system.

2. a. A continuous pressure situation shall be considered to exist when a pressure greater than atmospheric within the water supply system exists for more than 12 continuous hours.

b. A noncontinuous pressure situation shall be considered to exist if the conditions in subpar. a. do not occur.

3. A high hazard cross connection situation shall be considered to exist for a connection of the water supply system to:

a. Any part of the drain system; and

b. Any other piping system conveying water from nonpotable sources, including but not limited to lakes, rivers, streams or creeks.

4. Except as provided in subd. 5, a high hazard cross connection situation shall be considered to exist at:

a. A water supply hose bibb, faucet, wall hydrant, sill cock or other outlet which terminates with hose threads allowing a hose to be attached;

b. A water supply faucet, wall hydrant or other outlet which terminates with a serrated nipple allowing a hose to be attached; and

c. A water supply faucet, hydrant or outlet serving a sink used for building maintenance in a public building.

5. A cross connection shall not be considered to exist at the hose threaded outlet installed for the sole purpose of:

a. Draining a water supply system or any portion thereof;

b. Obtaining water quality samples of the water supply system or any portion thereof; or

c. Connecting individual residential automatic clothes washers.

6. a. A high hazard situation shall be considered to exist for the connection of two water supply systems one supplied by a public water supply and the other system supplied by a private well.

Note: The interconnection of a public water supply system and another source of water is addressed by in s. NR 811.09 and must be approved by the Department of Natural Resources.

b. Except as provided in subd. 7., a low hazard situation shall be considered to exist for the connection of a piping system, including but not limited to automatic fire sprinkler systems, standpipe systems, and processing purposes, which provides potable water for nonrequired potable water uses.

Note: Cross connection control devices used in conjunction with automatic fire sprinkler systems are to be listed by an acceptable testing agency for such an application under the standards governing the design and installation of automatic fire sprinkler systems.

7. A cross connection situation shall not be considered to exist for an automatic fire sprinkler system serving a one- or 2- family dwelling provided the sprinkler system is constructed of materials and joints suitable for water distribution systems as specified in ss. ILHR 84.30 (4) (e) and 84.40, respectively and the sprinkler system is supplied with only potable water.

(c) Containment. 1. For sewerage treatment facilities which are required to conform with ch. NR 110, in addition to the cross connection control required for each potable water usage or water outlet, a reduced pressure principle backflow preventer shall be installed:

a. In the water service to each building or structure within the complex;

b. In the private water main upstream of all water services serving the facility; or

c. In the water distribution system upstream of all water outlets and in the process piping network upstream of all points of use, if both a water distribution system and a process network is contained within the same building or structure.

2. For marinas, wharves and docks where potable water outlets are provided to serve boats or ships, in addition to the cross connection control required for each potable water outlet or usage, a reduced pressure principle backflow preventer shall be installed in the water supply system to limit backflow into the water supply source.

3. The installation of a cross connection control device in the water supply system for a building or structure shall not alleviate the requirement to provide cross connection control for the connection of each plumbing fixture, piece of equipment, appliance or other piping system.

(d) Prohibitions. The use of a toxic solution as a heat transfer fluid in single-wall heat exchanger for potable water is prohibited.

(e) Existing automatic fire sprinkler systems. An alteration, modification or addition to an existing automatic fire sprinkler shall necessitate conformance with this section, if the:

1. Existing water supply line to the existing sprinkler system is increased in diameter; or

2. Existing device or method which had been previously recognized to address cross connection concerns is to be removed or replaced.

Table 82.41-1
ACCEPTABLE CROSS CONNECTION CONTROL METHODS

TYPES or METHODS of CROSS CONNECTION CONTROL	SITUATIONS and CONDITIONS							
	Backpressure				Backsiphonage			
	Low Hazard		High Hazard		Low Hazard		High Hazard	
	Cont. Pressure	Noncont. Pressure	Cont. Pressure	Noncont. Pressure	Cont. Pressure	Noncont. Pressure	Cont. Pressure	Noncont. Pressure
Air Gaps (ANSI A112.1.2)	X	X	X	X	X	X	X	X
Pipe Applied Atmospheric Type Vacuum Breakers (ASSE 1001)						X		X
Hose Connection Vacuum Breakers (ASSE 1011)	X[a]	X	X[a]	X	X[a]	X	X[a]	X
Backflow Preventers with Intermediate Atmospheric Vents (ASSE 1012)	X	X			X	X		
Reduced Pressure Principle Backflow Preventers (ASSE 1013)	X	X	X	X	X	X	X	X
Vacuum Breakers - Anti-siphon, Pressure Type (ASSE 1020)					X	X	X	X
Barometric Loops					X	X	X	X

Note [a]: See limitation under sub. (4) (c) 1. a.

Table 82.41-2
ACCEPTABLE CROSS CONNECTION CONTROL METHODS FOR SPECIFIC APPLICATIONS

Types or Methods of Cross Connection Control	Types of Application or Use
Water Closet Flush Tank Ball Cocks (ASSE 1002)	Gravity water closet flush tanks
Hand Held Showers (ASSE 1014)	Hand held shower assemblies
Double Check Backflow Prevention Assemblies (ASSE 1015)	Automatic fire sprinkler systems and Standpipe systems
Trap Seal Primer Valves, Water Supply Fed (ASSE 1018)	Traps for drain systems
Wall Hydrants, Frost Proof Automatic Draining Anti-Backflow Type (ASSE 1019)	Hose threaded outlet connections
Stainless Steel Dual Check Valve Type Backflow Preventer with Vent	Carbonated beverage dispensers, post mix types
Laboratory Faucet Vacuum Breakers (ASSE 1035)	Laboratory faucets
Pressurized Flushing Devices (Flushometers) For Plumbing Fixtures (ASSE 1037)	Flushometer plumbing fixtures
Reduced Pressure Detector Assembly Backflow Preventer (ASSE 1047)	Automatic fire sprinkler systems
Double Check Detector Assembly Backflow Preventer (ASSE 1048)	Automatic fire sprinkler systems and Standpipe systems
Vacuum Breaker Tees [sub. (5) (k)]	Water treatment devices

(4) LIMITATIONS. (a) Cross connection control devices shall be limited in use in accordance with the respective standard, unless otherwise specifically permitted under this subsection.

(b) A pipe applied atmospheric type vacuum breaker shall be installed such that the bottom of the device or the critical level mark on the device is at least 6 inches above:

1. The flood level rim of the receptor serving the water supply port; and

2. The highest point downstream from the device where backpressure would be created.

(c) 1. a. The use of a hose connection vacuum breaker in a continuous pressure situation shall be limited to campgrounds and marinas.

b. The use of a hose connection vacuum breaker shall be limited to the discharge side of a control valve such as a faucet or hose bibb.

2. A hose connection vacuum breaker may not be employed in backpressure situations of more than 10 feet of water column.

(d) A backflow preventer with intermediate atmospheric vent:

1. May not be employed in backpressure situations of more than 150 psig; and

2. May not serve boilers having a maximum steam pressure setting greater than 15 psig or a maximum water pressure setting greater than 30 psig.

(e) A reduced pressure principle backflow preventer and a reduced pressure detector assembly backflow preventer may not be subjected to a backpressure greater than twice the rated working pressure of the device.

(f) A hand held shower may not be employed in backpressure situations of more than 2 feet of water column.

(g) A double check backflow prevention assembly and a double check detector assembly backflow preventer may not be subjected to a backpressure greater than twice the rated working pressure of the device.

(h) A trap seal primer valve shall be installed such that the bottom of the device or the critical level as marked on the device is at least 12 inches above:

1. The connection to the trap; and

2. The highest point downstream from the device where backpressure would be created.

(i) A wall hydrant, frost proof automatic draining, anti-backflow type, may not be employed in backpressure situations of more than 10 feet of water column.

(k) 1. An anti-siphon, pressure type vacuum breaker shall be installed such that the bottom of the device or the critical level mark on the device is at least 12 inches above:

a. The flood level rim of the receptor serving the water supply port; and

b. The highest point downstream from the device where backpressure would be created.

2. An anti-siphon, pressure type vacuum breaker shall be located only outside.

(l) A laboratory faucet vacuum breaker may not be employed in backpressure situations of more than 6 feet of water column.

(m) The cross connection control device to serve a hose bibb or hydrant that penetrates an exterior wall of a heated structure may not prevent a hose bibb or hydrant from being frost proof and self-draining as required under s. ILHR 82.40 (8) (a).

(5) INSTALLATION. (a) An air gap for cross connection control shall conform to ANSI A112.1.2.

Note: See appendix for further explanatory material.

(b) Cross connection control devices shall be installed in accordance with the appropriate standard, unless otherwise specifically permitted under this subsection.

Note: See s. ILHR 84.30 (5) (c).

(c) Cross connection control devices shall be protected from freezing.

(d) 1. A cross connection control device may not be located in uninhabitable spaces susceptible to flooding.

2. A cross connection control device which has one or more vent ports may not be located in a pit, vault or depression which is below the adjacent grade or floor level, even if the pit, vault or depression is provided with a drain at the bottom of the pit.

(e) 1. Vent ports of cross connection control devices shall be positioned:

a. Away from areas where toxic gases and fumes may accumulate;

b. Downward or protected to protect the ports from falling debris; and

c. So as to drain dry.

2. Cross connection control devices shall be so located that any vent ports of the devices shall be provided with an air gap in accordance with par. (a).

3. a. If a reduced pressure principle backflow preventer or a reduced pressure detector assembly backflow preventer is located within a building, a drain or receptor shall be provided to receive the discharge from the vent ports of the device. If a floor drain is to receive the discharge from the vent ports of a reduced pressure principle backflow preventer or a reduced pressure detector assembly backflow preventer, the flow or pathway of the discharge may not create a nuisance.

b. Where drain piping is provided for the discharge from a vent port, an air gap in accordance with par. (a) shall be provided between the vent port and the drain piping.

c. Where a receptor is provided for the discharge from a vent port, an air gap in accordance with par. (a) shall be provided between the vent port and the receptor.

(f) 1. All cross connection control devices shall be accessible for testing, maintenance and replacement purposes.

2. The test cocks for a reduced pressure principle backflow preventer, a reduced pressure detector assembly backflow preventer, a double check backflow prevention assembly, a double check detector assembly backflow preventer and a vacuum breaker - anti-siphon, pressure type may not be located:

a. Closer than 18 inches to a permanent wall or other obstruction for cross connection control devices less than 4 inches in size, unless an access panel is provided; and

b. Closer than 24 inches to a permanent wall or other obstruction for cross connection control devices 4 inches or more in size, unless an access panel is provided.

3. Where a cross connection control device is concealed, an access panel of sufficient size shall be provided to allow for maintenance and testing of the device.

4. A cross connection control device shall be located not more than 5 feet above the floor, surface or platform which is to provide access to the device.

(g) The discharge outlet of local waste piping serving a cross connection control device shall be visible and not be located within a concealed space.

(h) 1. The control valves on the inlet and outlet to a reduced pressure principle backflow preventer, a reduced pressure detector assembly backflow preventer, a double check backflow prevention assembly, and a double check detector assembly backflow preventer, may not be located:

a. Closer than 12 inches to a sidewall or other obstruction for cross connection control devices less than 4 inches in size;

b. Closer than 24 inches from the bottom of the valve to the floor for cross connection control devices less than 4 inches in size;

c. Closer than 24 inches to a wall or other obstruction for cross connection control devices 4 inches or more in size; and

d. Closer than 36 inches from the bottom of the valve to the floor for cross connection control devices 4 inches or more in size.

2. The control valves on the inlet and outlet to a vacuum breaker - anti-siphon, pressure type may not be located:

a. Closer than 12 inches to a sidewall or other obstruction; and

b. Closer than 24 inches from the bottom of the valve to the floor.

(i) No control valve may be placed downstream from a pipe applied atmospheric type vacuum breaker or a laboratory faucet vacuum breaker.

(j) A barometric loop to provide cross connection control for backsiphonage shall be formed by creating a loop in the potable water supply piping upstream to the source of cross connection.

1. The loop shall extend at least 35 feet above:

a. The highest point downstream from the loop where backpressure would be created; and

b. The point of discharge.

2. No outlets for potable water use shall be installed downstream of the peak of the loop.

(k) Vacuum breaker tees shall be assembled such that:

1. The bottom of the horizontal portion of the tee is installed at least one inch above the flood level rim of the receptor;

2. The inside diameter of the tee is equal to or greater than the inside diameter of the drain piping from the water treatment device;

3. The tee is installed in such a position that the discharge will not create a nuisance;

4. The piping upstream of the tee is of a type suitable for water distribution in accordance with s. ILHR 84.30 (4) (e).

5. The vent portion of the tee is equal to or greater than the inside diameter of the drain piping from the water treatment device; and

6. The vent port of the tee is:

a. Positioned away from areas where toxic gases and fumes may accumulate; and

b. Constructed to protect the port from falling debris.

(6) MAINTENANCE AND TESTING. (a) All cross connection control devices shall be maintained and tested in accordance with s. ILHR 82.21 (3).

SECTION 42. ILHR 82.50 (10) (f) and Table 25 are repealed.

SECTION 43. ILHR 84.20 (5) (l) 5 is created to read:

ILHR 84.20 (5) (l) 5. Pressurized flushing devices to serve urinals shall conform to ASSE 1037.

SECTION 44. ILHR 84.20 (5) (m) 6 is amended to read:

ILHR 84.20 (5) (m) 6. Each water closet shall be individually equipped with a flushing device. Pressurized flushing devices shall conform to ASSE 1037. All flushing devices shall be readily accessible for maintenance and repair. Ballcocks and fill valves shall be of the anti-siphon type and shall conform to ASSE 1002. The critical level mark on the ballcock and fill valve shall be located at least one inch above the full opening of the overflow pipe.

SECTION 45. ILHR 84.30 (4) (g) is created to read:

ILHR 84.30 (4) (g) Used piping. Piping which has been used for any other purpose than conveying potable water may not be used for water supply systems.

SECTION 46. ILHR 84.30 (5) (c) is repealed and recreated to read:

ILHR 84.30 (5) (c) Special fittings and valves. 1. Water hammer arrestors shall conform to ANSI A112.26.1 or ASSE 1010.

2. Relief valves and automatic gas shutoff devices for hot water supply systems shall conform to ANSI Z21.22.

3. Backwater valves shall conform to ANSI A112.14.1.

4. Pipe applied atmospheric type vacuum breakers shall conform to ASSE 1001.

5. Water pressure reducing valves and strainers for water pressure reducing valves for domestic water supply systems shall conform to ASSE 1003.

6. Hose connection vacuum breakers shall conform to ASSE 1011.

7. Backflow preventers with intermediate atmospheric vents shall conform with ASSE 1012.

8. Reduced pressure principle backflow preventers shall conform with ASSE 1013.

9. Double check backflow prevention assemblies shall conform to ASSE 1015.

10. Trap seal primer valves, water fed shall conform to ASSE 1018.

11. Wall hydrants, frost proof automatic draining anti-backflow type shall conform to ASSE 1019.

12. Vacuum breakers - anti-siphon, pressure type shall conform to ASSE 1020.

13. Laboratory faucet vacuum breakers shall conform to ASSE 1035.

14. Reduced pressure detector assembly backflow preventers shall conform to ASSE 1047.

15. Double check detector assembly backflow preventers shall conform to ASSE 1048.

SECTION 47. ILHR 84.60 Table 84.60-2 line 1 is renumbered line 1m and line 1 is created to read:

Table 84.60-2
(Partial Table)

	ANSI	American National Standards Institute, Inc. 1430 Broadway New York, New York 10018
	Standard Reference Number	Title
1.	A112.1.2-73(R-1942)	Air Gaps in Plumbing Systems
1m.	A112.6.1M-79	Supports for Off-the Floor Plumbing Fixtures for Public Use

SECTION 48. ILHR 84.60 Table 84.60-4 is repealed and recreated to read:

Table 84.60-4

	ASSE	American Society of Sanitary Engineering P.O. Box 9712 Bay Village, Ohio 44140
	Standard Reference Number	Title
1.	1001-90	Pipe Applied Atmospheric Type Vacuum Breakers
2.	1002-86	Water Closet Flush Tank Ball Cocks
3.	1003-82	Water Pressure Reducing Valves for Domestic Water Supply Systems
4.	1004-90	Commercial Dishwashing Machines
5.	1005-86	Water Heater Drain Valves, 3/4" Iron Pipe Size
6.	1006-86	Residential Use (Household) Dishwashers
7.	1007-86	Home Laundry Equipment
8.	1008-86	Household Food Waste Disposer Units
9.	1009-90	Commercial Food Waste Grinder Units
10.	1010-82	Water Hammer Arrestors
11.	1011-82	Hose Connection Vacuum Breakers
12.	1012-78	Backflow Preventers with Intermediate Atmospheric Vent
13.	1013-88	Reduced Pressure Principle Backflow Preventers
14.	1014-90	Hand Held Showers
15.	1015-88	Double Check Backflow Prevention Assembly
16.	1018-86	Trap Seal Primer Valves, Water Supply Fed
17.	1019-78	Wall Hydrants, Frost Proof Automatic Draining, Anti-Backflow Types
18.	1020-81	Vacuum Breakers, Anti-siphon, Pressure Type
19.	1023-79	Hot Water Dispensers, Household Storage Type, Electrical

	Standard Reference Number	Title
20.	1025-78	Diverters for Plumbing Faucets with Hose Spray, Anti-Siphon Type, Residential Applications
21.	1035-81	Laboratory Faucet Vacuum Breakers
22.	1037-90	Pressurized Flushing Devices (Flushometers) for Plumbing Fixtures
23.	1047-89	Reduced Pressure Detector Assembly Backflow Preventer
24.	1048-89	Double Check Detector Assembly Backflow Preventer
25.	5010-1013-1-90	Field Test Procedure for a Reduced Pressure Principle Assembly Using A Differential Pressure Gauge
26.	5010-1015-1-90	Field Test Procedure for a Double Check Valve Assembly Using a Duplex Gauge
27.	5010-1015-2-90	Field Test Procedure for a Double Check Valve Assembly Using a Differential Pressure Gauge - High- and Low- Pressure Hose Method
28.	5010-1015-3-90	Field Test Procedure for a Double Check Valve Assembly Using a Differential Pressure Gauge - High- Hose Method
29.	5010-1015-4-90	Field Test Procedure for a Double Check Valve Assembly Using a Sight Tube
30.	5010-1020-1-90	Field Test Procedure for a Pressure Vacuum Breaker Assembly
31.	5010-1047-1-90	Field Test Procedure for a Reduced Pressure Detector Assembly Using A Differential Pressure Gauge
32.	5010-1048-1-90	Field Test Procedure for a Double Check Detector Assembly Using a Duplex Gauge
33.	5010-1048-2-90	Field Test Procedure for a Double Check Detector Assembly Using a Differential Pressure Gauge - High- and Low- Pressure Hose Method
34.	5010-1048-3-90	Field Test Procedure for a Double Check Detector Assembly Using a Differential Pressure Gauge - High- Pressure Hose Method
35.	5010-1048-4-90	Field Test Procedure for a Double Check Detector Assembly Using a Sight Tube

(END)

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EFFECTIVE DATE

Pursuant to s. 227.22 (2) (intro.), Stats., these rules shall take effect on the first day of the month following publication in the Wisconsin Administrative Register.

* *

Tommy G. Thompson
Governor

Carol Skornicka
Secretary

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State of Wisconsin
Department of Industry, Labor and Human Relations

October 12, 1993

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Douglas LaFollette
Secretary of State
10th Floor
30 West Mifflin Street
Madison, Wisconsin 53703

Dear Messrs. Poulson and LaFollette:

TRANSMITTAL OF RULE ADOPTION

CLEARINGHOUSE RULE NO. 92-182

RULE NO. Sections ILHR 82.41, 81.115, 51.21, 51.23, 2.62, 2.64

RELATING TO: Cross Connection Control for Water Supply Systems

Pursuant to section 227.20, Stats., agencies are required to file a certified copy of every rule adopted by the agency with the offices of the Secretary of State and the Revisor of Statutes.

At this time, the following material is being submitted to you:

1. Order of Adoption.
2. Rules Certificate Form.
3. Rules in Final Draft Form.

Pursuant to section 227.114, Stats., a summary of the final regulatory flexibility analysis is included for permanent rules. A fiscal estimate and fiscal estimate worksheet is included with an emergency rule.

Respectfully submitted,

Carol Skornicka
Secretary