

Chapter SPS 345

MECHANICAL REFRIGERATION

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Note: Chapter Ind 45 as it existed on September 30, 1983 was repealed and a new chapter ILHR 45 was created effective October 1, 1983; chapter ILHR 45 as it existed on August 31, 1994 was repealed and a new chapter ILHR 45 was created effective September 1, 1994. Chapter ILHR 45 was renumbered to be chapter Comm 45 under s. 13.93 (2m) (b) 1., Stats., and corrections made under s. 13.93 (2m) (b) 6. and 7., Stats., Register, October, 1996, No. 490. Chapter Comm 45 as it existed on October 31, 2003 was repealed and a new chapter Comm 45 was created Register October 2003 No. 574, effective November 1, 2003. Chapter Comm 45 was renumbered chapter SPS 345 under s. 13.92 (4) (b) 1., Stats., Register December 2011 No. 672.

Subchapter I — Purpose, Scope and Application

SPS 345.10 Purpose and scope. Pursuant to s. 101.17, Stats., the purpose of this chapter is to establish all of the following:

- (1) Minimum safety standards for the design, construction, installation, operation, testing, maintenance, repairs and inspection of mechanical refrigeration systems in public buildings and places of employment.
- (2) Minimum standards for preventing the release of ozone-depleting refrigerants to the atmosphere.

Note: Pursuant to federal regulations, individuals who install or service HVAC equipment involving ozone-depleting refrigerants are required to hold a Type I, II, III, or Universal technician certification issued in accordance with section 608 of the federal Clean Air Act and title 40 CFR part 82, subpart F.

Note: The Department and other state agencies may have additional rules that affect the design, construction, installation, operation, testing, maintenance, repair and inspection of mechanical refrigeration systems in public buildings and places of employment, including chapters SPS 314, Fire Prevention; SPS 316, Electrical; SPS 341, Boilers and Pressure Vessels; SPS 361 to 366, Wisconsin Commercial Building Code; and SPS 381 to 387, Plumbing.

Note: Under chapters SPS 314 and 361, neither NFPA® 1 nor the *International Fire Code*® are applied by the Department to mechanical refrigeration systems.

History: CR 03-012: cr. Register October 2003 No. 574, eff. 11-1-03; CR 10-011: renum. from Comm 45.01 and am. Register August 2010 No. 656, eff. 9-1-10; **correction in (intro.) made under s. 13.92 (4) (b) 7., Stats., Register September 2013 No. 693.**

SPS 345.11 Application. (1) **GENERAL.** This chapter applies to all of the following except as provided in sub. (2):

- (a) All mechanical refrigeration systems that are installed or constructed on or after September 1, 2010.
- (b) A change to a refrigerant of a different number designation.
- (c) Replacement parts or components for any mechanical refrigeration system that exists on or after September 1, 2010.
- (d) Alterations to any mechanical refrigeration system that exists on or after September 1, 2010.

Note: A proposed alteration for an existing system may necessitate modifying other components of the system in order to make the proposed alteration comply with this chapter – and some alterations may necessitate modifying other features of a

building, such as an automatic fire sprinkler system, that must comply with requirements in chapters SPS 361 to 366, the Wisconsin Commercial Building Code.

Note: As referenced in section SPS 345.40 (2) (c), see subchapter VI of chapter SPS 341 for additional requirements relating to alterations and repairs for pressure vessels and their fittings, settings or appurtenances.

Note: Designers, contractors and owners are encouraged to contact the Department to discuss their intentions for alterations and to determine, on a case-by-case basis, any upgrades that are needed. See the Note under section SPS 345.31 (2) (b) 2. for the corresponding telephone number or address.

(e) Repaired portions or components of any mechanical refrigeration system that exists on or after September 1, 2010.

Note: Under this paragraph, any portions of a system that are being repaired must comply with the rules of this chapter which exist on the date of the repair. See paragraph (f) and section SPS 345.11 (3) for the applicability of this chapter to any other portions of the system.

(f) Operation, testing, maintenance and inspection of all mechanical refrigeration systems that exist on or after September 1, 2010.

(g) Any removal, transfer, storage, release, recovery, charging or other use of any ozone-depleting refrigerant that exists in Wisconsin on or after September 1, 2010.

(2) **EXEMPTIONS.** This chapter does not apply to the use of water or air as the primary refrigerant.

(3) **RETROACTIVITY.** A design, construction or installation rule in subchs. III to VI does not apply retroactively to mechanical refrigeration systems or components existing prior to the effective date of the rule unless specifically stated in the rule.

(4) **DIFFERING RULES.** (a) Where any department-written rule in this chapter differs from a requirement within a standard referenced in this chapter, the department-written rule shall govern.

(b) Where a provision of this chapter prescribes a general requirement and another provision of this chapter prescribes a specific or more detailed requirement regarding the same subject, the specific or more detailed requirement shall govern, except as provided in par. (a).

(c) Where different sections of this chapter specify conflicting requirements, the most restrictive requirement, as determined by the department, shall govern, except as provided in pars. (a) and (b).

(5) **INTERPRETATIONS.** Under s. 101.02 (1), Stats., the department reserves the right to interpret the requirements in this chapter and in all adopted codes and standards.

Note: Section 101.02 (1) of the Statutes reads as follows: “The department shall adopt reasonable and proper rules and regulations relative to the exercise of its powers and authorities and proper rules to govern its proceedings and to regulate the mode and manner of all investigations and hearings.”

History: CR 03-012: cr. Register October 2003 No. 574, eff. 11-1-03; CR 10-011: (title), (1) and (2) renum. from Comm 45.02 and am. (title), (1) (title),

(intro.), (a), (c) and (d), cr. (1) (e) to (g), and (3) to (5) Register August 2010 No. 656, eff. 9-1-10.

SPS 345.12 Local regulations. This chapter does not limit the power of cities, villages and towns to make or enforce additional or more stringent regulations, provided the regulations do not conflict with this chapter, any other rule of the department, or law.

History: CR 03-012: cr. Register October 2003 No. 574, eff. 11-1-03; CR 10-011: renum. from Comm 45.03 Register August 2010 No. 656, eff. 9-1-10.

Subchapter II — Definitions

SPS 345.20 Definitions. In this chapter:

(1) “Alteration” means any of the following:

(a) A change in a mechanical refrigeration system that involves an extension, addition or change to the arrangement, type or purpose of the existing installation or component.

(b) A change in the type of refrigerant for a mechanical refrigeration system.

(2) “Approved” means acceptable to the department.

(3) “Approved nationally recognized testing laboratory” means a laboratory acceptable to the department, which provides uniform testing and examination procedures and standards for meeting design, manufacturing and factory test requirements of this chapter; is organized, equipped and qualified for testing; and has a follow-up inspection service of the current production of the listed products.

(4) “Authorized agent” means any of the following or their authorized representatives:

(a) A boiler-pressure vessel inspector who is so certified under ch. SPS 305 and is addressed in a written contract with the department as enforcing this chapter.

(b) A local governmental unit that has been authorized in writing by the department to administer and enforce this chapter.

(c) A first class city that has accepted the responsibility to administer and enforce this chapter.

Note: As of September 1, 2010, only the City of Milwaukee had become a first class city.

(5) “Department” means the department of safety and professional services.

(6) “Ozone-depleting refrigerant” has the meaning specified under s. 100.45 (1) (d), Stats.

Note: Under s. 100.45 (1) (d), Stats., “ozone-depleting refrigerant” means a substance used in refrigeration that is or contains a class I substance, as defined in 42 USC 7671 (3) or a Class II substance, as defined in 42 USC 7671 (4).

(7) “Place of employment” has the meaning specified under s. 101.01 (11), Stats.

Note: Under s. 101.01 (11), Stats., “place of employment” includes every place, whether indoors or out or underground and the premises appurtenant thereto where either temporarily or permanently any industry, trade or business is carried on, or where any process or operation, directly or indirectly related to any industry, trade or business, is carried on, and where any person is, directly or indirectly, employed by another for direct or indirect gain or profit, but does not include any place where persons are employed in private domestic service which does not involve the use of mechanical power or in farming. “Farming” includes those activities specified in s. 102.04 (3), and also includes the transportation of farm products, supplies or equipment directly to the farm by the operator of said farm or employees for use thereon, if such activities are directly or indirectly for the purpose of producing commodities for market, or as an accessory to such production. When used with relation to building codes, “place of employment” does not include an adult family home, as defined in s. 50.01 (1), or, except for the purposes of s. 101.11, a previously constructed building used as a community-based residential facility, as defined in s. 50.01 (1g), which serves 20 or fewer residents who are not related to the operator or administrator.

(8) “Public building” has the meaning specified under s. 101.01 (12), Stats.

Note: Under s. 101.01 (12), Stats., “public building” means any structure, including exterior parts of such building, such as a porch, exterior platform or steps providing means of ingress or egress, used in whole or in part as a place of resort, assemblage, lodging, trade, traffic, occupancy, or use by the public or by 3 or more tenants. When used in relation to building codes, “public building” does not include a previously constructed building used as a community-based residential facility as defined in s. 50.01 (1g) which serves 20 or fewer residents who are not related to the operator or administrator or an adult family home, as defined in s. 50.01 (1).

(9) “Repair” means the restoration of any portion or component of a mechanical refrigeration system to a safe operating condition.

History: CR 03-012: cr. Register October 2003 No. 574, eff. 11-1-03; CR 10-011: (intro.), (2), (3), (5) to (8) renum. from Comm 45.05 (intro.), (1), (2), (4), (7) to (9), r. (3), (5) and (6), cr. (1), (4) and (9) Register August 2010 No. 656, eff. 9-1-10; correction in (4) (a), (5) made under s. 13.92 (4) (b) 6., 7., Stats., Register December 2011 No. 672.

Subchapter III — Administration and Enforcement

SPS 345.30 Installation registration. (1) CLASSIFICATIONS. Any installation of the following mechanical refrigeration systems or components thereof shall be registered with the department:

(a) Any system using a Group A1 or B1 refrigerant and having a capacity rated at or greater than 50 horsepower, 50 tons or 50,000 volt-amperes.

(b) Any system using a Group A2, B2, A3 or B3 refrigerant and having a capacity rated at or greater than 10 horsepower, 10 tons or 10,000 volt-amperes.

(c) Any alteration of a mechanical refrigeration system, that causes the system to have or exceed the capacity in par. (a) or (b).

(d) Any alteration or repair of a currently registered mechanical refrigeration system.

Note: See normative appendix C in ANSI/ASHRAE standard 15, as adopted in subchapter IV, for characteristics of the refrigerant safety groups listed in paragraphs (a) and (b). For characteristics of individual refrigerants, such as the safety groups they are assigned to, see Tables 1 and 2 in ANSI/ASHRAE standard 34, as referenced in appendix E of ANSI/ASHRAE standard 15.

(2) FORMS. Registration information shall be submitted on form SBD-34.

Note: The Department forms required in this chapter are available for a nominal fee at telephone 800-DOC-SALE or 411 (Telecommunications Relay), or at no charge at the Department’s Web site at www.dsps.wi.gov through links to Division of Industry Services forms.

(3) SUBMITTAL DEADLINE. (a) The registration form shall be submitted to the department at least 20 business days before the system is initially placed in operation.

(b) A registration form shall be submitted to the department at least 20 business days before a system is reactivated after an alteration, repair or replacement.

Note: The purpose of the registration is to inform the Department of the pending activation of the refrigeration system and thereby enable performance of the inspection specified in section SPS 345.31 (2). Under that section, this inspection must be performed within 45 business days after completion of construction or installation.

History: CR 03-012: cr. Register October 2003 No. 574, eff. 11-1-03; CR 10-011: renum. from Comm 45.07 and am. (1) (intro.), (2) and (3), renum. (4) to be Comm 45.32 (6), cr. (1) (c) and (d) Register August 2010 No. 656, eff. 9-1-10.

SPS 345.31 Enforcement and inspections.

(1) ENFORCEMENT. (a) This chapter shall be enforced by the department and its authorized agents.

Note: Section 101.02 (15) (g) of the Statutes authorizes the Department and its authorized agents to enter any building, facility or premises and examine any mechanical refrigeration system or component and associated records for the purpose of enforcing this chapter.

(b) Where an authorized agent administers and enforces this chapter in conjunction with the department, the authorized agent’s administration and enforcement shall be exercised in advance of the department’s administration and enforcement.

Note: Under section SPS 345.11 (5), the department reserves the right to interpret the requirements in this chapter and in all adopted codes and standards.

(2) INSTALLATION INSPECTION. (a) The authorized agent or the department shall inspect a mechanical refrigeration system that is required to be registered under s. SPS 345.30 (1), within 45 business days after completion of the initial construction or installation, and within 45 business days after completion of construction or installation relating to any alteration, repair or replacement.

(b) 1. All refrigerant steel piping that will employ welded joints shall be inspected by the authorized agent or the department after the piping material is delivered to the job site and prior to installation of the piping.

2. The authorized agent or the department shall be given a minimum of 5 business days notice prior to the start of construction to arrange for inspections under this paragraph.

Note: The Department can be notified by writing to the Division of Industry Services, Mechanical Refrigeration Program, P.O. Box 7302, Madison, WI 53707-7302; or by telephone at 608/266-7548 or 411 (Telecommunications Relay); or by using the contact information available through the following Web site: <http://dps.wi.gov/Documents/Industry%20Services/Maps/Mechanical-Refrigeration-Gas-Systems-Anhydrous-Ammonia%20Map%2008-13.pdf>.

3. If applicable and if required by the authorized agent or the department, the following documents shall be made available for review during inspections under this paragraph:

- a. Welding procedure specification.
- b. Procedure qualification record.
- c. Welder performance qualification.
- d. Welder continuity record.
- e. Design calculations.
- f. Design plans for the piping system.
- g. Material test reports.
- h. Certificates of compliance.

Note: For further information relating to the welding documentation listed in subdivision 3. a. to d., see section IX of the ASME Boiler and Pressure Vessel Code, as referenced in section SPS 345.550 (1).

4. Form SBD-5204 shall be completed and be retained at the job site for reference during inspections under this paragraph. If the design of the piping is acceptable, the authorized agent or the department shall sign the form.

(c) Welded, prefabricated steel piping that is part of a mechanical refrigeration system to be erected on a job site shall be inspected at the fabrication shop by the authorized agent or the department – or, for out-of-state fabricators, by an inspector commissioned by the national board of boiler and pressure vessel inspectors. The fabricator shall make a copy of the inspection report or a copy of the completed form SBD-5204 available to the installer at the job site verifying that the prefabricated piping complies with ASME B31.5. Design calculations for the prefabricated piping shall be provided to the authorized agent or the department if so requested.

(d) Within 5 business days of completing the installations and inspections under par. (b) or (c), a copy of the completed SBD-5204-E form shall be filed with the authorized agent or the department, unless additional time is granted by the authorized agent or the department.

Note: The address for submitting forms to the Department is the Division of Industry Services, Mechanical Refrigeration Program, P.O. Box 7302, Madison, WI 53707-7302; and the fax number is 608-283-7420.

Note: ASME B31.5 is a mandatory reference for designers, fabricators and producers of refrigeration equipment, and is referenced in appendix E of ANSI/ASHRAE standard 15, which is adopted in subchapter IV.

Note: It is recommended that out-of-state installers contact the Department prior to any fabrication or installation of prefabricated piping, to expedite compliance with the Department's requirements.

Note: The National Board of Boiler and Pressure Vessel Inspectors can be contacted at 1055 Crupper Avenue, Columbus, OH 43229; or at telephone 614.888.8320; or at www.nationalboard.com.

Note: The Department forms required in this chapter are available for a nominal fee at telephone 800-DOC-SALE or 411 (Telecommunications Relay) or at docsales@doa.state.wi.us, or at no charge at the Department's Web site at www.dps.wi.gov through links to Division of Industry Services forms.

(3) PERIODIC INSPECTIONS. (a) 1. Except as provided in subd. 2., any mechanical refrigeration system using a Group A1 or B1 refrigerant and having a capacity rated at or greater than 50 horsepower, 50 tons or 50,000 volt-ampères shall be inspected by the authorized agent or the department at least once every 36 months.

2. a. Mechanical refrigeration systems containing a Group A1 or B1 refrigerant which are used only for air conditioning for human occupancy and which have their mechanical components located outdoors with the discharge from any relief valve located at least 20 feet from any building opening are exempt from periodic inspections.

b. An air intake opening that is part of an outdoor self-contained system under subd. 2. a. is not considered a building opening for the purposes of this subdivision.

(b) Any mechanical refrigeration system using a Group A2, B2, A3 or B3 refrigerant and having a capacity rated at or greater than 10 horsepower, 10 tons or 10,000 volt-ampères shall be inspected by the authorized agent or the department at least once every 12 months.

Note: See Table 1 and normative appendix C in ANSI/ASHRAE standard 15, as adopted in subchapter IV, for characteristics of the refrigerant groups listed in paragraphs (a) and (b).

History: CR 10-011: cr. (title), (1) and (2), sub. (3) renum. from Comm 45.08 (3) and am. Register August 2010 No. 656, eff. 9-1-10; correction in (2) (a) made under s. 13.92 (4) (b) 7., Stats., Register December 2011 No. 672; CR 11-047: cr. (2) (d) Register May 2012 No. 677, eff. 6-1-12.

SPS 345.32 Permit to operate. (1) (a) 1. Within 5 business days after completing an inspection, the authorized agent or the department shall determine whether the mechanical refrigeration system complies with the applicable requirements of this chapter.

2. For each inspection performed by an authorized agent, a report shall be sent to the department in accordance with the department's electronic data interchange transfer guidelines, within 5 business days after completing the inspection, unless additional time is authorized by the department.

Note: The Department will provide assistance at no charge regarding the use of the electronic data interchange system. The guidelines are available on the Internet at <http://dps.wi.gov/SB/docs/SB-BoilerEdiGuidelines.pdf>.

(b) Within 10 business days after making or receiving the determination under par. (a), the department shall issue a permit to operate if it has been determined that the mechanical refrigeration system complies with the applicable requirements of this chapter.

(2) The permit to operate shall list the maximum operating pressure allowed under this chapter.

(3) Permits to operate shall be valid for one of the following periods:

(a) Three years, for systems inspected under s. SPS 345.31 (3) (a).

(b) One year, for systems inspected under s. SPS 345.31 (3) (b).

(4) (a) The owner or user of a mechanical refrigeration system that is required to have periodic inspections under s. SPS 345.31 (3) shall be responsible for all of the following:

1. Obtaining and maintaining a valid permit to operate each system.

2. Notifying the authorized agent or the department, within 20 business days thereof, if the system is placed in an inactive status, as specified in sub. (5).

(b) 1. a. The permit to operate shall be posted in the machinery room or adjacent to the entrance to the machinery room except as provided in subd. 1. b. and c.

b. If there is no machinery room and the machinery is located within the building, the permit shall be posted in a conspicuous location on or near the machinery.

c. If there is no machinery room and the machinery is located outside the building, the permit shall be posted in a conspicuous location near the access opening for the machinery unless otherwise approved by the authorized agent or the department.

2. The posted permit shall be maintained in a legible state.

(5) (a) A mechanical refrigeration system may be placed in an inactive status if acceptable documentation is provided to the authorized agent or the department showing that the entire refrigerant charge has been removed from the system.

(b) Within 5 business days after an authorized agent receives the documentation under par. (a), the agent shall verify the inactive status and report that verification to the department.

Note: Shutdown of a system for repair, alteration, replacement or seasonal use is not considered to be placing it in an inactive status.

(6) The owner or user shall notify the authorized agent or the department at least 20 business days before reactivating a mechanical refrigeration system at any time after the expiration

date on the permit to operate. The system shall be re-inspected by the authorized agent or the department and a new permit to operate shall be obtained before the system may be reactivated.

Note: The Department can be notified by writing to the Division of Industry Services, Mechanical Refrigeration Program, P.O. Box 7302, Madison, WI 53707-7302; or by telephone at 608/266-7548 or 411 (Telecommunications Relay); or by using the contact information available through the following Web site: <http://dsps.wi.gov/Documents/Industry%20Services/Maps/Mechanical-Refrigeration-Gas-Systems-Anhydrous-Ammonia%20Map%2008-13.pdf>.

History: CR 03-012: cr. Register October 2003 No. 574, eff. 11-1-03; CR 10-011: (title) and (1) to (4) renum. from Comm 45.09 (title), (4), (1) to (3) and am., cr. (5), sub. (6) renum. from Comm 45.07 (4) and am. Register August 2010 No. 656, eff. 9-1-10; correction in (3) (a), (b), (4) (a) (intro.) made under s. 13.92 (4) (b) 7., Stats., Register December 2011 No. 672.

SPS 345.33 Reporting of accidents. If a mechanical refrigeration system component fails and causes injuries to any person that require more than first aid treatment, the owner or user shall report the facts involved to the department within the following 24 hours. The owner or user may not remove or disturb the mechanical refrigeration system or any of its components nor permit any such removal or disturbance prior to receiving authorization from the authorized agent or the department, except for the purpose of saving human life or preventing property damage.

Note: The address for reporting accidents to the Department is the Division of Industry Services, Mechanical Refrigeration Program, P.O. Box 7302, Madison, WI 53707-7302; and the fax number is 608-283-7420.

Note: The Department can be contacted at 608-266-7548 during normal business hours. The State Division of Emergency Management can be contacted at 800-943-0003 during non-business hours.

History: CR 03-012: cr. Register October 2003 No. 574, eff. 11-1-03; CR 10-011: renum. from Comm 45.10 and am. Register August 2010 No. 656, eff. 9-1-10.

SPS 345.34 Petition for variance. The department shall consider and may grant a variance to a provision of this chapter in accordance with ch. SPS 303. The petition for variance shall include a position statement from the fire department having jurisdiction over the affected property, and from any authorized agent having jurisdiction.

Note: Chapter SPS 303 requires the submittal of a petition for variance form (SBD-9890) and a fee, and that an equivalency is established in the petition for variance that meets the intent of the rule being petitioned. Chapter SPS 303 also requires the Department to process regular petitions within 30 business days and priority petitions within 10 business days.

History: CR 03-012: cr. Register October 2003 No. 574, eff. 11-1-03; CR 10-011: renum. from Comm 45.11 and am. Register August 2010 No. 656, eff. 9-1-10; correction made under s. 13.92 (4) (b) 7., Stats., Register December 2011 No. 672.

SPS 345.35 Compliance responsibilities. (1) Any inspection report describing any noncompliance with this chapter shall be provided to the owner of the mechanical refrigeration system.

(2) The owner of a mechanical refrigeration system shall correct any aspects of the system that do not comply with applicable requirements of this chapter, within any time period prescribed by the authorized agent or the department.

History: CR 10-011: cr. Register August 2010 No. 656, eff. 9-1-10.

SPS 345.36 Appeals. (1) **APPEAL OF DEPARTMENT ORDER.** Pursuant to s. 101.02 (6) (e), Stats., any person who owns or occupies a property that is affected by an order of the department may petition the department for a hearing on the reasonableness of the order.

(2) **APPEAL OF LOCAL ORDER.** Pursuant to s. 101.02 (7) (b), Stats., any person affected by a local order that is in conflict with an order of the department may petition the department for a hearing on the local order.

(3) **PETITION FOR ADMINISTRATIVE RULE.** Pursuant to s. 227.12, Stats., any municipality, corporation or any 5 or more persons having an interest in an administrative rule may petition the department requesting the adoption, amendment or repeal of the rule.

History: CR 03-012: cr. Register October 2003 No. 574, eff. 11-1-03; CR 10-011: renum. from Comm 45.12 Register August 2010 No. 656, eff. 9-1-10.

SPS 345.37 Penalties. Penalties for violations of this chapter shall be assessed in accordance with s. 101.02 (12) and (13) (a), Stats.

Note: Section 101.02 (12), Stats., indicates that every day during which any person, persons, corporation or any officer, agent or employee thereof, fails to observe and comply with an order of the department will constitute a separate and distinct violation of such order.

Note: Section 101.02 (13) (a), Stats., indicates penalties will be assessed against any employer, employee, owner or other person who fails or refuses to perform any duty lawfully enjoined, within the time prescribed by the department, for which no penalty has been specifically provided, or who fails, neglects or refuses to comply with any lawful order made by the Department, or any judgment or decree made by any court in connection with ss. 101.01 to 101.599, Stats. For each such violation, failure or refusal, such employee, owner or other person must forfeit and pay into the state treasury a sum not less than \$10 nor more than \$100 for each violation.

History: CR 03-012: cr. Register October 2003 No. 574, eff. 11-1-03; CR 10-011: renum. from Comm 45.13 Register August 2010 No. 656, eff. 9-1-10; correction made under s. 13.92 (4) (b) 7., Stats., Register September 2013 No. 693.

SPS 345.38 Fees. Fees for permits to operate, inspections and petitions for variance shall be submitted as specified in ch. SPS 302.

History: CR 03-012: cr. Register October 2003 No. 574, eff. 11-1-03; CR 10-011: renum. from Comm 45.14 Register August 2010 No. 656, eff. 9-1-10; correction made under s. 13.92 (4) (b) 7., Stats., Register December 2011 No. 672.

Subchapter IV — Standards

SPS 345.40 Design, construction and operation.

(1) **ADOPTION.** (a) ANSI/ASHRAE standard 15-2007 and its addenda a to i, subject to the modifications specified in subch. V, are hereby incorporated by reference into this chapter.

(b) ANSI/IIAR 2-2008, subject to the modifications specified in subch. VI, is hereby incorporated by reference into this chapter.

(2) **GENERAL.** (a) All mechanical refrigeration systems shall be designed, constructed, installed, operated, maintained, tested and inspected in accordance with ANSI/ASHRAE standard 15, except as otherwise provided in this chapter.

(b) Closed-circuit ammonia mechanical refrigeration systems may be designed, constructed, installed and tested in accordance with subch. VI and ANSI/IIAR 2, in combination with ANSI/ASHRAE standard 15 sections 10.2 and 11.

(c) Any repair or alteration to a pressure vessel in a mechanical refrigeration system shall comply with ss. SPS 341.60 to 341.64.

Note: Copies of the adopted standards are on file in the offices of the Department and the Legislative Reference Bureau, and may be purchased as follows: For ANSI/ASHRAE Standard 15-2007, contact the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc., at 1791 Tullie Circle NE, Atlanta, GA 30329; or at www.ashrae.org. For ANSI/IIAR 2-2008, contact the International Institute of Ammonia Refrigeration at 1110 North Glebe Road, Arlington, VA 22201; or at www.iira.org.

(3) **SECONDARY REFERENCES.** Any codes or standards referenced in the standards adopted in sub. (1) shall apply to the prescribed extent of each such reference, except as modified by this chapter.

(4) **ALTERNATE STANDARDS.** Any alternate standard that is equivalent to or more stringent than a standard incorporated by reference or otherwise referenced under this chapter may be used in lieu of the incorporated or referenced standard if the alternate standard is accepted in writing by the department.

(5) **RELEASING REFRIGERANT.** Release of any refrigerant to the environment shall be minimized as fully as practical.

History: CR 10-011: cr. Register August 2010 No. 656, eff. 9-1-10; correction in (2) (c) made under s. 13.92 (4) (b) 7., Stats., Register December 2011 No. 672.

Subchapter V — Changes, Additions or Omissions to ANSI/ASHRAE Standard 15

SPS 345.500 General. Changes, additions or omissions to ANSI/ASHRAE standard 15 are specified in this subchapter and are rules of the department and are not requirements of ANSI/ASHRAE standard 15.

History: CR 10-011: cr. Register August 2010 No. 656, eff. 9-1-10.

SPS 345.501 Scope. The requirements of ANSI/ASHRAE standard 15 sections 1 and 2 are not included as part of this chapter.

Note: The sections in this subchapter are generally numbered to correspond with both the numbering of the subchapter and the section numbering in ANSI/ASHRAE standard 15. For example, section SPS 345.511 corresponds to subchapter 5 and to section 11 in ANSI/ASHRAE standard 15.

History: CR 10-011: cr. Register August 2010 No. 656, eff. 9-1-10.

SPS 345.503 Definitions. This is a department definition for this chapter in addition to the definitions in ANSI/ASHRAE standard 15 section 3: “Authority having jurisdiction” or “jurisdiction having authority” means the department or authorized agent.

History: CR 10-011: cr. Register August 2010 No. 656, eff. 9-1-10.

SPS 345.508 Eye wash and shower. This is a department rule and informational note in addition to the requirements in ANSI/ASHRAE standard 15 section 8.12: An eye wash and body shower unit shall be located external to the machinery room and be readily accessible.

Note: It is recommended that additional such units be located accessibly within the machinery room such that no unit is further than 50 feet from any point in the room.

History: CR 10-011: cr. Register August 2010 No. 656, eff. 9-1-10.

SPS 345.509 Design and construction. (1) MATERIALS. This is an additional, department exception to the requirements in ANSI/ASHRAE standard 15 section 9.1.5: Discharge piping for mechanical refrigeration safety relief valves that discharges outside a building may consist of plastic materials and joint primers and adhesives which the department has approved specifically for this purpose, provided all of the following conditions are met:

- (a) The design pressure in the refrigeration system does not exceed 15 psi.
- (b) The refrigeration system does not contain a refrigerant other than Group A1 or B1.
- (c) The piping is noncombustible when tested in accordance with ASTM E 136 or is self-extinguishing with a rating of 5V-A, V-O or V-1 when tested in accordance with UL 94.

Note: As of September 1, 2010, the plastic materials approved under this subsection include polyvinyl chloride piping.

(2) ASME B31.3 PIPING. This is a department informational note to be used under ANSI/ASHRAE standard 15 section 9.10.1:

Note: Process piping complying with ASME B31.3 is an example of piping that complies with this section by being appropriately listed rather than by complying with ASME B31.5.

History: CR 10-011: cr. Register August 2010 No. 656, eff. 9-1-10.

SPS 345.511 General requirements. (1) PRESSURE RELIEF VALVE REPLACEMENT. This is a department rule in addition to the requirements in ANSI/ASHRAE standard 15 section 11.6:

- (a) All pressure relief valves for any ammonia mechanical refrigeration system that exists on or after September 1, 2010, shall be replaced in accordance with the manufacturer’s recommendations and all of the following, except as provided in par. (b):
 - 1. Each valve shall be replaced within 5 years after the date of installation.
 - 2. Each valve may not be over 2 years old at the time of installation.
 - 3. A record of the valve’s installation shall be maintained until the valve is replaced.
- (b) This subsection does not apply to relief devices that discharge internally to another part of a closed-loop refrigeration system.

(2) PERIODIC TESTS. This is a department rule in addition to the requirements in ANSI/ASHRAE standard 15 section 11.6.3: Each of the following emergency devices and systems that exist on or after September 1, 2010, shall be tested at least annually, and documentation of the testing shall be available onsite for inspection by the authorized agent or the department:

- (a) Treatment and flaring systems.
- (b) Valves and appurtenances necessary to the operation of emergency refrigeration control boxes.
- (c) Fans and associated equipment intended to operate emergency ventilation systems.
- (d) Refrigerant detection and alarm systems.
- (e) Remote controls for shutdown of compressors and refrigerant pumps.

(3) REPORTABLE INCIDENTS. This is a department informational note to be used under ANSI/ASHRAE standard 15 section 11.7, paragraph c:

Note: Refrigerants typically should not be discharged except in an emergency. The Department of Natural Resources, federal agencies and local fire departments may have requirements relating to being immediately notified upon the automatic or manual discharge of specified amounts of any refrigerant.

Notification may not be necessary for any of the following conditions:

- 1. Refrigeration systems operating at pressures below atmospheric and incorporating automatic purge systems.
- 2. Incidental operation of automatic pressure relief valves resulting in minor release of the refrigerant charge.
- 3. Incidental minor releases associated with service operations after system pump-down has been accomplished.

History: CR 10-011: cr. Register August 2010 No. 656, eff. 9-1-10.

SPS 345.550 ANSI/ASME B31.5. (1) Substitute the following wording for the requirements in ANSI/ASHRAE standard 15 normative appendix E citation 5: *ASME Boiler and Pressure Vessel Code*, Section VIII, Rules for Construction of Pressure Vessels, Division 1, 2007, The American Society of Mechanical Engineers (ASME), 3 Park Avenue, New York, NY 10016-5990.

(2) Substitute the following wording for the requirements in ANSI/ASHRAE standard 15 normative appendix E citation 6: *ASME B31.5-2006, Refrigeration Piping and Heat Transfer Components*, The American Society of Mechanical Engineers (ASME), 3 Park Avenue, New York, NY 10016-5990.

History: CR 10-011: cr. Register August 2010 No. 656, eff. 9-1-10.

Subchapter VI — Changes, Additions or Omissions to ANSI/IIAR 2

SPS 345.600 General. Changes, additions or omissions to ANSI/IIAR 2 are specified in this subchapter and are rules of the department and are not requirements of ANSI/IIAR 2.

Note: Under section SPS 345.40 (2) (b), closed-circuit ammonia mechanical refrigeration systems may be designed, constructed, installed and tested in accordance with ANSI/IIAR 2 and this subchapter, in combination with ANSI/ASHRAE standard 15 sections 10.2 and 11.

History: CR 10-011: cr. Register August 2010 No. 656, eff. 9-1-10.

SPS 345.601 Scope. The requirements of ANSI/IIAR 2 sections 1 and 2 are not included as part of this chapter.

Note: The sections in this subchapter are generally numbered to correspond with both the numbering of the subchapter and the section numbering in ANSI/IIAR 2. For example, section SPS 345.613 corresponds to subchapter 6 and to section 13 in ANSI/IIAR 2.

History: CR 10-011: cr. Register August 2010 No. 656, eff. 9-1-10.

SPS 345.611 Overpressure protection. (1) DISCHARGE CAPACITY OF PLATE HEAT EXCHANGERS. This is a department alternative to the requirements in ANSI/IIAR 2 section 11.2.7: The minimum required relief device capacity for a plate heat exchanger based on an external heat addition scenario may be calculated in accordance with the following equation:

$$C_{r,plate\ HX} = f \cdot \sqrt{L^2 + W^2} \cdot H$$

where:

- $C_{r,plate\ HX}$ = minimum required relief device capacity for the plate heat exchanger (lb_m/min of air)
- f = relief device capacity factor
- L = length of the plate pack (ft)
- W = width of the plate pack (ft)
- H = height of the plate pack (ft)

(2) DISCHARGE PIPING FOR ATMOSPHERIC PRESSURE RELIEF. This is a department rule in addition to the requirements in ANSI/IIAR 2 section 11.3.6.1: Appendix A Tables A-3 may not be used for schedule 80 piping.

History: CR 10-011: cr. Register August 2010 No. 656, eff. 9-1-10.

SPS 345.613 Machinery room. **(1) EMERGENCY REMOTE CONTROLS.** (a) *Ventilation.* Substitute the following wording for the requirements in ANSI/IIAR 2 section 13.2.1.4: Emergency remote controls for the mechanical means of ventilation shall be provided and be located immediately outside the machinery room, at the principal entrance to the room.

(b) *Compressors.* Substitute the following wording for the requirements in ANSI/IIAR 2 section 13.3.1.6: Emergency remote controls to stop the action of the refrigeration compressors shall be provided and be located immediately outside the machinery room, at the principal entrance to the room.

(2) SIGNAGE. This is a department rule in addition to the requirements in ANSI/IIAR-2 section 13.3: A legible, easily accessible, permanent sign shall be securely attached to the mechanical refrigeration system, showing that the system was designed in accordance with ANSI/IIAR-2.

History: CR 10-011: cr. Register August 2010 No. 656, eff. 9-1-10.

Subchapter VII — Ozone-Depleting Refrigerants

SPS 345.70 Ozone-depleting refrigerants.

(1) CLEANING OF EQUIPMENT. Ozone-depleting refrigerant may

not be used for cleaning purposes, including the cleaning of interior or exterior surfaces of refrigeration equipment.

(2) TRANSFERRING REFRIGERANT. Whenever ozone-depleting refrigerant is removed from refrigeration equipment, the ozone-depleting refrigerant shall be transferred to storage containers using equipment that is approved by the department. The department shall approve any transfer equipment if an approved nationally recognized testing laboratory has certified the equipment.

Note: The Department will accept equipment that has been tested and certified in accordance with the Air-Conditioning and Refrigeration Institute (ARI) standard ARI 740.

(3) RELEASING REFRIGERANT. Ozone-depleting refrigerant may not be knowingly or negligently released to the environment, except for minimal releases that occur as a result of efforts to recover, reclaim or recycle ozone-depleting refrigerant removed from refrigeration equipment.

(4) ADDING REFRIGERANT. Before putting additional ozone-depleting refrigerant into refrigeration equipment, the refrigeration equipment shall be inspected and repaired if a leak is found or suspected. A yearly leak rate identified by the federal environmental protection agency shall be used to determine whether repairs are necessary.

Note: See subpart F of part 82 in title 40 of the Code of Federal Regulations for further requirements relating to ozone-depleting refrigerants.

History: CR 03-012: cr. Register October 2003 No. 574, eff. 11-1-03; CR 10-011: renum. from Comm 45.21 and am. (2) and (4) Register August 2010 No. 656, eff. 9-1-10; correction in (1) made under s. 13.92 (4) (b) 7., Stats., Register December 2011 No. 672; **CR 13-014: r. (1), renum. (2) to (5) to (1) to (4) Register September 2013 No. 693, eff. 10-1-13.**