7150.0205 DESIGN AND CONSTRUCTION.

Subpart 1. **Tanks.** Each tank must be properly designed and constructed and any part underground that routinely contains product must be protected from corrosion using one of the following methods, except that all hazardous materials tanks and all tanks, other than heating oil tanks, installed or replaced after December 22, 2007, must comply with item D. The corrosion protection methods must be in accordance with one of the codes of practice in subpart 2 developed by a nationally recognized association or independent testing laboratory. Tanks that do not meet the requirements of this subpart must be permanently closed according to part 7150.0410.

A. The tank is constructed of fiberglass-reinforced plastic.

B. The tank is constructed of steel and cathodically protected in the following manner:

(1) the tank is coated with a suitable dielectric material;

(2) field-installed cathodic protection systems are designed by a corrosion expert;

(3) impressed current systems are designed to allow determination of current operating status as required in part 7150.0215, subpart 3, item A; and

(4) cathodic protection systems are operated and maintained according to part 7150.0215.

C. The tank is constructed of a steel and fiberglass-reinforced plastic composite.

D. The tank is secondarily contained.

(1) Secondary containment tanks shall use one of the following designs:

(a) the tank is of double-walled fiberglass-reinforced plastic construction;

(b) the tank is of double-walled steel construction, with cathodic protection of the outer wall meeting the requirements of item B;

(c) the tank is of double-walled steel construction with a fiberglass-reinforced plastic jacket; or

(d) the tank is of single-walled steel construction with a fiberglass-reinforced plastic jacket, which is designed to contain and detect a leak through the steel wall.

(2) All secondary containment tanks shall be capable of containing a release from the inner wall of the tank and shall be designed with release detection according to part 7150.0330, subpart 6.

(3) If a tank is replaced in accordance with this item, all piping appurtenant to the tank shall comply with subpart 3, item D.

E. The tank is internally lined.

(1) A tank with an internal lining as the sole method of corrosion protection shall be internally inspected and evaluated within ten years after lining, and every five years thereafter, and found to be structurally sound with the lining still performing according to original design specifications, as follows:

(a) internal inspections and evaluations shall be conducted in accordance with American Petroleum Institute, Interior Lining and Periodic Inspection of Underground Storage Tanks, API 1631 (2001), incorporated by reference under part 7150.0500;

(b) lining inspectors shall be approved by the manufacturer of the lining, if an approval process exists, or shall be qualified by reason of training and experience in the application and inspection of type of internal lining to be inspected;

(c) the owner, operator, or lining inspector shall notify the commissioner at least ten days prior to performing an inspection according to part 7150.0090, subpart 1;

(d) inspections shall include thorough cleaning of the lining; visual inspection of the lining for cracking, blistering, perforation, disbonding, and excessive wear; ultrasonic thickness testing (steel tanks only); holiday (spark) testing for lining continuity; lining thickness measurement; lining hardness testing; and representative photographs of internal surfaces;

(e) inspections shall be primarily by manned entry. Video camera observation alone is not allowed;

(f) minor abnormal conditions of the lining, such as short cracks or localized disbonding, may be repaired, so long as the conditions do not constitute more than five percent of the lining surface area and the repairs will return the lining to substantially the original design specifications;

(g) if a repair to the tank or to the internal lining as allowed under unit (f) is performed, the tank must pass a tightness test at a 0.1 gallon per hour leak rate using equipment for automatic tank gauging or another test method, prior to or within 30 days after returning the tank to service;

(h) a written inspection report shall be produced that describes the results of all tests and evaluations required by unit (d), and the results of tightness testing under unit (g). The report shall identify any abnormal conditions found during the inspection and the measures taken to correct the conditions. The inspector shall certify in the report that, in the professional judgment of the inspector, the tank is structurally sound,

the lining is performing according to original design specifications, and the tank and lining will maintain their integrity for at least five years under the anticipated conditions of use; and

(i) the inspection report under unit (h) shall be submitted to the commissioner within 60 days of the internal inspection.

(2) A tank with an internal lining as the sole method of corrosion protection shall be permanently closed and site assessment completed according to parts 7150.0410 and 7150.0420 if at any time the lining is found to have failed. Lining failure is defined as any abnormal conditions other than minor abnormal conditions described in subitem (1), unit (f). The lining may not be replaced, nor may such a tank be upgraded with cathodic protection or another corrosion protection method to meet the requirements of this subpart.

F. The tank construction and corrosion protection are determined by the commissioner to be designed to prevent the release or threatened release of a stored, regulated substance in a manner that is no less protective of human health and the environment than items A to E. The commissioner's determination under this item must be obtained in writing and the owners and operators must keep the determination for the life of the tank.

Subp. 2. **Codes of practice for tanks.** Codes of practice for subpart 1 are described in items A to E. The codes are incorporated by reference under part 7150.0500.

A. The following codes of practice apply to subpart 1, item A:

(1) Underwriters Laboratories, Standard for Glass-Fiber-Reinforced Plastic Underground Storage Tanks for Petroleum Products, Alcohols, and Alcohol-Gasoline Mixtures, UL 1316 (2006); or

(2) Underwriters' Laboratories of Canada, Standard for Reinforced Plastic Underground Tanks for Flammable and Combustible Liquids, ULC-S615-98 (1998).

B. The following codes of practice apply to subpart 1, item B:

(1) Steel Tank Institute, Specification and Manual for External Corrosion Protection of Underground Steel Storage Tanks, STI-P3 (2006);

(2) Underwriters Laboratories, Standard for Safety for External Corrosion Protection Systems for Steel Underground Storage Tanks, UL 1746 (2007);

(3) Underwriters' Laboratories of Canada, External Corrosion Protection Systems for Steel Underground Tanks for Flammable and Combustible Liquids, CAN/ULC-S603.1-03 (2003);

(4) Underwriters' Laboratories of Canada, Standard for Steel Underground Tanks for Flammable and Combustible Liquids, CAN/ULC-S603-00 (2000);

(5) Underwriters' Laboratories of Canada, Isolating Bushings for Steel Underground Tanks Protected with External Corrosion Protection Systems, ULC-S631-05 (2005);

(6) National Association of Corrosion Engineers, Corrosion Control of Underground Storage Tank Systems by Cathodic Protection, RP0285-2002 (2002); or

(7) Underwriters Laboratories, Standard for Steel Underground Tanks for Flammable and Combustible Liquids, UL 58 (1996).

C. The following codes of practice apply to subpart 1, item C:

(1) Underwriters Laboratories, Standard for Safety for External Corrosion Protection Systems for Steel Underground Storage Tanks, UL 1746 (2007); or

(2) Steel Tank Institute, ACT-100 Specification for External Corrosion Protection of Composite Steel Underground Storage Tanks, STI F894 (2006).

D. The following codes of practice apply to subpart 1, item D:

(1) Underwriters Laboratories, Standard for Steel Underground Tanks for Flammable and Combustible Liquids, UL 58 (1996);

(2) Underwriters Laboratories, Standard for Safety for External Corrosion Protection Systems for Steel Underground Storage Tanks, UL 1746 (2007);

(3) Steel Tank Institute, Recommended Practice for Interstitial Tightness Testing of Existing Underground Double Wall Steel Tanks, RP012 (2006); and

(4) Steel Tank Institute, Standard for Dual Wall Underground Steel Storage Tanks, STI F841 (2006).

E. The following code of practice applies to subpart 1, item E: American Petroleum Institute, Interior Lining and Periodic Inspection of Underground Storage Tanks, API 1631 (2001).

Subp. 3. **Piping.** The piping that routinely contains regulated substances and is in contact with the ground must be properly designed, constructed, and protected from corrosion using one of the following methods, except that all hazardous materials piping and all piping, other than heating oil piping, installed or replaced after December 22, 2007, other than piping that conveys regulated substances under safe suction meeting the design requirements of part 7150.0300, subpart 6, item B, subitem (2), shall comply with item D. The corrosion protection methods in items A to D must be in accordance with one of the codes of practice in subpart 4 developed by a nationally recognized association or independent testing laboratory.

A. The piping is constructed of fiberglass-reinforced plastic.

B. The piping is constructed of steel and cathodically protected in the following manner:

(1) the piping is coated with a suitable dielectric material;

(2) field-installed cathodic protection systems are designed by a corrosion expert;

(3) impressed current systems are designed to allow determination of current operating status as required in part 7150.0215, subpart 3, item A; and

(4) cathodic protection systems are operated and maintained according to part 7150.0215.

C. The piping is constructed of a steel and fiberglass-reinforced plastic composite.

D. The piping is secondarily contained.

(1) Secondary containment piping shall use one of the following designs:

(a) the piping is of double-walled fiberglass-reinforced plastic construction;

(b) the piping is of double-walled steel construction, with cathodic protection of the outer wall meeting the requirements of item B;

(c) the piping is of double-walled steel construction with a fiberglass-reinforced plastic jacket;

(d) the piping is of single-walled steel construction with a fiberglass-reinforced plastic jacket, which is designed to contain and detect a leak through the steel wall; or

(e) the piping is of double-walled nonmetallic flexible construction.

(2) All secondary containment piping shall be capable of containing a release from the inner wall of the piping and shall be designed with release detection according to part 7150.0340, subpart 4.

E. The piping is of single-walled nonmetallic flexible construction.

F. The piping construction and corrosion protection are determined by the commissioner to be designed to prevent the release or threatened release of a stored regulated substance in a manner that is no less protective of human health and the environment than the requirements of items A to D. The commissioner's determination under this item must be obtained in writing and the tank owners and operators must keep the determination for the life of the tank.

Subp. 4. **Codes of practice for piping.** Codes of practice for subpart 3 are described in items A and B. The codes are incorporated by reference under part 7150.0500.

A. The following codes of practice apply to subpart 3, item A:

(1) Underwriters Laboratories, Emergency Breakaway Fittings, Swivel Connectors and Pipe-Connection Fittings for Petroleum Products and LP-Gas, UL 567 (2004);

(2) Underwriters' Laboratories of Canada, Standard for Flexible Underground Hose Connectors for Flammable and Combustible Liquids, CAN/ULC-S633-99 (1999); or

(3) Underwriters' Laboratories of Canada, Guide for Glass-Fiber-Reinforced Plastic Pipe and Fittings for Flammable Liquids, ULC Subject C107C-M1984 (1984).

B. The following codes of practice apply to subpart 3, item B:

(1) National Fire Protection Association, Flammable and Combustible Liquids Code, NFPA 30 (2003);

(2) American Petroleum Institute, Installation of Underground Petroleum Storage Systems, API 1615 (1996);

(3) American Petroleum Institute, Cathodic Protection of Underground Petroleum Storage Tanks and Piping Systems, API 1632 (1996); or

(4) National Association of Corrosion Engineers, Control of External Corrosion on Underground or Submerged Metallic Piping Systems, SP0169-2007 (2007).

Subp. 5. **Spill and overfill prevention equipment.**

A. Except as provided in item B, to prevent spilling and overfilling associated with product transfer to the underground storage tank system, owners and operators must use the following spill and overfill prevention equipment:

(1) spill prevention equipment that will prevent release of product to the environment when the transfer hose is detached from the fill pipe, for example, a spill catchment basin; and

(2) overfill prevention equipment that will:

(a) automatically shut off flow into the tank when the tank is no more than 95 percent full; or

(b) alert the transfer operator when the tank is no more than 90 percent full by restricting the flow into the tank or triggering a high-level alarm audible to the transfer operator.

B. Owners and operators are not required to use the spill and overfill prevention equipment specified in item A if:

(1) alternative equipment is used that is determined by the commissioner to be no less protective of human health and the environment than the equipment specified in item A; or

(2) the underground storage tank system is filled by transfers of no more than 25 gallons at one time.

The commissioner's determination under subitem (1) must be obtained in writing and the tank owners and operators must keep the determination for the life of the tank.

Subp. 6. **Submersible pumps.**

A. After December 22, 2007, any new or replacement submersible pump, including replacement pump head, shall be provided with secondary containment around and beneath the pump head. Secondary containment shall be:

(1) designed to contain a release from the pump head and any connectors, fittings, and valves beneath the pump head until the release can be detected and removed;

(2) designed with liquid-tight sides, bottom, cover, and points of penetration;

(3) constructed of fiberglass-reinforced plastic or other synthetic material of comparable thickness and durability; and

(4) compatible with the stored substance.

B. The following code of practice may be used to meet the requirements of this subpart, as applicable: Underwriters' Laboratories of Canada, Under-Dispenser Sumps, ULC/ORD-C107.21-1992 (1992). The code is incorporated by reference under part 7150.0500.

Subp. 7. **Dispensers.**

A. After December 22, 2007, any new dispenser, and any replacement dispenser where work is performed beneath any shear valves or check valves or on any flexible connectors or unburied risers, shall be provided with secondary containment beneath the dispenser. Secondary containment shall be:

(1) designed to contain a release from the dispenser and any connectors, fittings, and valves beneath the dispenser until the release can be detected and removed;

(2) designed with liquid-tight sides, bottom, and points of penetration;

(3) constructed of fiberglass-reinforced plastic or other synthetic material of comparable thickness and durability; and

(4) compatible with the stored substance.

B. The following code of practice shall be used to meet the requirements of this subpart: Underwriters' Laboratories of Canada, Under-Dispenser Sumps, ULC/ORD-C107.21-1992 (1992). The code is incorporated by reference under part 7150.0500.

Statutory Authority: *MS s 116.49*

History: *32 SR 1751; 34 SR 1610*

Published Electronically: *May 26, 2010*