

Joint Committee on Administrative Rules

ADMINISTRATIVE CODE

TITLE 41: FIRE PROTECTION

CHAPTER I: OFFICE OF THE STATE FIRE MARSHAL

PART 175 TECHNICAL REQUIREMENTS FOR UNDERGROUND STORAGE TANKS AND THE STORAGE, TRANSPORTATION, SALE AND USE OF PETROLEUM AND OTHER REGULATED SUBSTANCES

The General Assembly's Illinois Administrative Code database includes only those rulemakings that have been permanently adopted. This menu will point out the Sections on which an emergency rule (valid for a maximum of 150 days, usually until replaced by a permanent rulemaking) exists. The emergency rulemaking is linked through the notation that follows the Section heading in the menu.

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AUTHORITY: Implementing the Gasoline Storage Act [430 ILCS 15] and authorized by Section 2 of the Gasoline Storage Act [430 ILCS 15/2].

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SECTION 175.100 DEFINITIONS

Section 175.100 Definitions

Unless otherwise provided by the text in this Part, all terms in this Part shall be as defined in 41 Ill. Adm. Code 174.100.

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SECTION 175.200 GENERAL REQUIREMENTS FOR MOTOR FUEL DISPENSING
FACILITIES**

Section 175.200 General Requirements for Motor Fuel Dispensing Facilities

- a) Other than kerosene and except as otherwise provided in this Subpart B and 41 Ill. Adm. Code 180, all dispensing of flammable and combustible liquids at motor fuel dispensing facilities shall be from underground storage tanks.
- b) All motor fuel dispensing facilities must abide by the operating and other requirements of this Subpart B.
- c) Motor fuel dispensing facilities must hold a current and valid motor fuel dispensing permit for the particular type of facility involved in order to operate. No motor fuel dispensing facility shall open for business until inspected and approved by OSFM. Facilities operating under different classifications at any time shall meet the requirements for all respective classifications that apply to the facility. Approval for dispensing operations will be granted upon compliance with 41 Ill. Adm. Code 172, 174, 175, 176 and 177. No owner or other person or responsible entity shall permit any person to violate the provisions of this Subpart B. Violation of the requirements for motor fuel dispensing facilities of this Subpart B may subject the owner or operator to penalties that may include revocation of the facility motor fuel dispensing permit issued under this Subpart and the compliance certification (green decal) issued under 41 Ill. Adm. Code 177 as required for operation of the facility. Failure to remain in compliance with UST rules may also result in OSFM's issuance of a red tag for the tanks or facility at issue, prohibiting any further operation of the facility or further deposit of regulated substances into any tank subject to a red tag. Maintenance of dispensers, hoses, emergency breakaways, electrical equipment directly tied to the UST, and emergency shutoffs and shear valves are examples of required items subject to red tag for noncompliance.
- d) Applications for a Motor Fuel Dispensing Facility Permit
 - 1) No construction of a motor fuel dispensing facility or modification of an existing motor fuel dispensing facility shall be commenced until applications and plans are given written approval in the form of a review letter by OSFM.
 - 2) The applications shall be those prescribed by OSFM and plans must be submitted in triplicate for each motor fuel dispensing facility showing

compliance with applicable OSFM rules. The plans shall be drawn to scale and shall, at a minimum, include the following:

- A) Lot lines and dimensions.
 - B) Building lines and dimensions.
 - C) Location and size of tanks and pump island.
 - D) Location of control station (if applicable).
 - E) Type, make, model and location of dispensing devices or equipment.
 - F) Fire extinguisher locations.
 - G) Clearances from dispensing devices to property lines and buildings both on and off the property.
- 3) After examining the submitted application and plans, OSFM shall issue a review letter valid for a period of 6 months. Submission of incomplete or illegible applications and/or plans shall be cause for denial of applications.
- 4) Motor fuel dispensing facility work of the following kinds requires application and plan submittal to OSFM prior to commencing the work:
- A) A station being newly constructed.
 - B) A station being established in a building that previously contained a different occupancy.
 - C) Making substantial modifications to an existing facility. Substantial modification would include, but not be limited to:
 - i) Installation of new dispensing islands or dispensers in new locations.
 - ii) Relocation of an emergency shutoff switch.
 - D) Changing from one facility category to another, as those categories are listed in Sections 175.210 through 175.250. The requirement to obtain a permit for the change will still apply even if only part of the facility is being changed (for example only one dispenser island) or if the facility plans to operate under a different category for only a portion of a 24-hour period.
 - E) Construction or relocation of buildings on the property, even if they are not the "primary" motor fuel dispensing facility station control buildings.
- 5) Motor fuel dispensing facility work of the following kinds does not require application and plan submittal to OSFM prior to commencing the work. This type of work or modifications will be inspected by OSFM when the facility is due for permit renewal:

- A) Like-for-like replacement of existing equipment (e.g., replacement of existing dispensing cabinets or components not involving the shear valve or items below the shear valve; changing existing dispensing nozzles, hoses or fittings; replacing an existing emergency shutoff switch in its current location).
 - B) Replacing (or installing additional) collision protection posts or guardrails.
 - C) Changing or replacing warning or instructional signs.
 - D) Replacing or adding to the complement of portable fire extinguishers.
- 6) In addition to the requirement for a motor fuel dispensing permit pursuant to this Subpart before any dispensing can occur, work affecting UST components or equipment shall also require a separate Section 175.300 permit to be obtained via the submittal of separate applications to OSFM pursuant to that Section.
- e) Issuance and Renewal of Motor Fuel Dispensing Facility Permits
- 1) A motor fuel dispensing facility permit or permit renewal will be issued by OSFM after an on-site inspection has been conducted by OSFM to verify compliance with all applicable OSFM rules.
 - 2) No motor fuel dispensing facility shall open for business until inspected and approved by OSFM, and until OSFM issues a motor fuel dispensing facility permit, which must be prominently displayed at all times at the motor fuel dispensing facility.
 - 3) Motor fuel dispensing facility permits shall be issued on a biennial basis. These permits shall expire on December 31 of the year shown on the permit.
 - 4) Any name or ownership change shall require separate notification to OSFM within 30 days.
- f) Storage and handling of LP gases at motor fuel dispensing facilities shall be in accordance with 41 Ill. Adm. Code 200.

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SECTION 175.210 ATTENDED SELF-SERVICE MOTOR FUEL DISPENSING
FACILITIES AND ISLANDS**

Section 175.210 Attended Self-Service Motor Fuel Dispensing Facilities and Islands

All dispensing of Class I, II or III liquids at attended self-service motor fuel dispensing facilities and islands must be under the supervision and control of an attendant. The following requirements shall apply to attended self-service motor fuel dispensing facilities and islands:

- a) All electrical installations shall comply with the edition of NFPA 70 in effect at the time of installation of the electrical equipment and shall further comply with the applicable requirements of Section 175.425.
- b) Every self-service motor fuel dispensing facility shall maintain a control station in a location readily accessible to the attendant. Separate fueling areas more than 100 feet apart and designated by signage so indicating may have separate control stations if each separate fueling area complies with this Subpart B and 41 Ill. Adm. Code 174, 175 and 176.
- c) A method that does not require coins or currency to activate shall be provided for the attendant to contact the fire department.
- d) Conspicuously marked and easily accessible emergency shutoff switches must be provided at each facility and shall be:
 - 1) Located so that at least one emergency shutoff is at least 20 feet but not more than 100 feet from each dispenser.
 - 2) Interconnected so that activation of one shutoff activates all the shutoffs whenever more than one emergency shutoff switch is provided.
 - 3) Equipped with an additional emergency shutoff at the control station, which shall be conspicuously marked and readily accessible to the attendant, whenever the control station is less than 20 feet from any dispenser or a security booth is provided for the attendant. The emergency shutoff shall be located in a position to allow all dispensing devices to be readily visible to the attendant, or as approved by OSFM, and where a security booth is provided, the control station and emergency shutoff shall be inside the security booth.

- 4) Compliance retrofits shall be completed by September 1, 2013.
- e) Power for illumination of dispensing areas required by this Subpart B shall not be affected by activation of any of the electrical shutoffs when the illumination is located outside of hazardous (classified) locations or is intrinsically safe.
- f) Resetting from an emergency electrical shutoff condition shall require manual intervention by the owner or attendant and shall be accomplished only after the condition that caused it to be activated has been corrected.
- g) All dispensing units shall be readily visible from the control station without assistive devices. However, as an alternative, in the event that the attendant's view of a dispenser is permanently obstructed, or if a dispenser is located so that activity at the dispenser is not readily visible, closed-circuit cameras that provide a view of each side of the dispensing unit and project an image on a screen at least 6 inches in diagonal located at the control station may be used. The cameras shall be allowed to sweep to provide a view of multiple dispensing locations, but must provide a view on the screen of each dispensing unit at least every 30 seconds. In lieu of the closed-circuit camera, the facility may elect to have an emergency electrical shutoff switch that shall be located at least 20 and not more than 50 feet from the dispenser that has a permanently obstructed view. Using an emergency shutoff switch in lieu of the closed-circuit camera pursuant to this subsection (g) must be approved in advance by OSFM. If a closed-circuit camera or viewing screen is inoperable and cannot provide surveillance of dispensing units to the attendant at the control station, and an emergency electrical shutoff switch has not been approved by OSFM and provided in lieu of the camera as provided in this subsection (g), self-service dispensing of fuel at these dispensers is prohibited.
- h) The attendant shall at all times be able to communicate with persons in the dispensing area. For distances greater than 40 feet between the control station and the dispenser, a communication system audible to each dispensing area shall be required that allows the attendant to give instruction or warning to the customer.
- i) All emergency shutoff switches shall be tested, and all shear valves visually inspected, at least annually to ensure that they are functioning properly and that the dispenser is mounted properly. Documentation of annual testing shall be kept at the motor fuel dispensing facility for 2 years and available for examination by a representative of OSFM. If documentation of annual testing of emergency shutoff switches is not available, the facility shall be subject to demonstration of this equipment during inspection by OSFM.
- j) Attendants
 - 1) At all times when an attended motor fuel dispensing station is open for public use, at least one attendant shall be on duty, and no motor fuel shall be dispensed at any time when the attendant is not at or near the control station or pump island. The attendant's primary duty shall be to supervise the dispensing of motor fuels, motor oils and services normally related to the dispensing.
 - 2) The attendant shall refuse service to any person who is smoking or who appears to be unable to dispense fuel safely, and shall shut off the dispensing unit if a patron fails to follow instructions in compliance with OSFM rules. It shall be the responsibility of the attendant to:

- A) carefully observe the dispensing of liquids into vehicles and portable containers;
 - B) control or eliminate sources of ignition;
 - C) immediately notify local fire authorities of any product spilled;
 - D) take other appropriate actions to prevent ignition of accidental spills;
 - E) refuse service to any customer who appears to lack the ability to properly and safely utilize the equipment (e.g., intoxication, inability to place the nozzle in the gas tank receptacle, inability to follow written or oral instructions of the attendant, or the person is too young to be aware of the hazards and requirements for safe dispensing of motor vehicle fuels);
 - F) to inspect all portable containers for conformance with 41 Ill. Adm. Code 174.
- k) All attendants and other employees of the motor fuel dispensing facility shall be thoroughly instructed in the location, operation and proper use of the communication system, control station, emergency shutoff switches, fire extinguishing equipment, operation of the dispensing units, and safety regulations for the dispensing of motor fuels. Upon request, all attendants shall demonstrate to OSFM their ability to use this equipment. Facilities that fail to instruct employees in these requirements shall be in violation and subject to enforcement action.
- l) No dwelling unit or sleeping facilities of any kind for the owner, attendant or any person shall be permitted at a self-service motor fuel dispensing facility. This does not include dormitory facilities for use of drivers at truck stops, provided that the dormitories are in compliance with the applicable provisions of 41 Ill. Adm. Code 100.
- m) Fire extinguishers shall be provided in accordance with 41 Ill. Adm. Code 174.350.
- n) Signs giving instructions for the operation of dispensing equipment must be conspicuously posted on each dispensing island where self-service is offered.
- o) **Minimum Signage.** Signs shall be provided that are clearly visible to all self-service customers. The signs shall be made of all-weather material and the lettering shall be not less than 7/8 inch high. The signs shall be mounted with not less than 4 nor more than 6½ feet from the bottom of the sign to the ground, or at a height approved by OSFM, and shall include the following wording, at a minimum:
- 1) "Warning";
 - 2) "Stop Engine";
 - 3) "No Smoking";
 - 4) "It is unlawful and dangerous for anyone to dispense gasoline into unapproved containers";

- 5) "It is unlawful and dangerous to dispense gasoline without an attendant on duty".
- p) Dispensing activity shall be limited to persons old enough to hold a valid driver's license.
- q) Collision Protection for LP Gas Storage Cabinets at Motor Fuel Dispensing Facilities. LP gas storage cabinets (including cabinets for LP gas tank exchange for gas grills) shall comply with Section 8.4 of NFPA 58, incorporated by reference in 41 Ill. Adm. Code 174.210, and shall also provide collision protection that consists of one of the following options:
 - 1) guardrails;
 - 2) steel or concrete bollards;
 - 3) raised sidewalks that are at least 5 inches tall at the face with the cabinet set up so the distance from the face of the raised sidewalk to the front of the cabinet is at least 40 inches. This measurement may also include an additional bumper guard to reach the required 40 inches. Raised sidewalks may also consist of curbs or parking bumper guards; or
 - 4) any other arrangement certified by a Licensed Professional Engineer in accordance with national codes of practice and accepted engineering practices and approved in advance by OSFM.

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SECTION 175.220 UNATTENDED SELF-SERVICE MOTOR FUEL DISPENSING
FACILITIES AND ISLANDS**

Section 175.220 Unattended Self-Service Motor Fuel Dispensing Facilities and Islands

Unattended self-service motor fuel dispensing facilities and islands shall comply with all of the requirements for attended motor fuel dispensing facilities and islands (see Section 175.210) with the additions and modifications provided in this Section. Requirements specific to control stations and attendants in Section 175.210 are not applicable to unattended facilities. If a motor fuel dispensing facility is to be operated as an unattended station during any portion of a day, it shall meet the standards for unattended operation.

- a) **Minimum Signage.** Signs shall be posted in all weather materials by each actuator (or at the dispenser if the actuator is an integral part of the dispenser). These instructions shall be mounted with not less than 4 feet nor more than 6½ feet from the bottom of the sign to the ground, or at a height approved by OSFM, and include, at a minimum, the following information in letters not less than ⅞ inch in height:
 - 1) "No smoking";
 - 2) "Turn off engine";
 - 3) "Containers for gasoline must be red";
 - 4) "Containers for kerosene must be blue";
 - 5) "It is dangerous and unlawful to fill unapproved containers with gasoline, diesel or kerosene";
 - 6) "In case of fire or spill use emergency shutoff (or stop) button located at..." (owner must insert the locations of the emergency shutoffs);
 - 7) "Master electrical shutoff transmits fire alarm to fire department".
- b) **Conspicuously marked and easily accessible emergency shutoff switches** must be provided at each dispensing island, in addition to the emergency shutoff switch that is required to be located at least 20 feet but not more than 100 feet from each dispenser. When more than one emergency shutoff switch is provided, all devices shall be interconnected. Stations with only one island may elect to utilize a single

emergency shutoff switch located at least 20 feet but not more than 100 feet from each dispenser, or at a location approved by OSFM. A sign shall be placed at or near each emergency shutoff switch stating that activation of the emergency shutoff switch "transmits a fire alarm to the fire department". Resetting from an emergency electrical shutoff condition shall require manual intervention by the owner or attendant and shall be accomplished only after the condition that caused it to be activated has been corrected.

c) Fire Alarm Systems

- 1) Activation of any emergency shutoff switch at the facility shall automatically transmit an alarm to local emergency fire services providers by sending a signal via one of the following mechanisms, which shall meet the requirements of NFPA 72:
 - A) Auxiliary alarm system;
 - B) Central station alarm connection;
 - C) Proprietary alarm receiving facility or system;
 - D) Remote station alarm connection; or
 - E) When the mechanisms in subsections (c)(1)(A) through (c)(1)(D) are not available, an alternate plan for notification of local emergency services meeting NFPA 70 and NFPA 72 and approved by OSFM in advance of the use.
- 2) The fire alarm system shall be installed, tested and maintained according to NFPA 70 and NFPA 72. The alarm system must also meet the alarm system requirements of subsections (h)(1)(C) and (h)(2)(D), including the requirement for an audible alarm when triggered.

d) All emergency shutoff switches shall be tested, and all shear valves visually inspected, at least annually to ensure that they are functioning properly and that the dispenser is mounted properly. Documentation of annual testing shall be kept at the motor fuel dispensing facility and available for examination by a representative of OSFM. If documentation of annual testing of emergency shutoff switches is not available, the facility shall be subject to demonstration of this equipment during inspection by OSFM.

e) Actuators may use currency, coins, keys or cards to activate dispenser and pumps.

f) Dispensing devices or actuators must limit the delivery of product in a manner that requires reactivation of the latch open (hold-open) device for any dispensing beyond the following amounts:

- 1) Motor vehicle fuels (Class I, II and III)
 - A) Class I liquids (gasoline, gasohol, ethanol, motor fuel blends) – maximum 50 gallons.
 - B) Class II and III liquids (diesel fuel) – maximum 250 gallons.

- 2) Kerosene (grade K-1 only) – 18 gallons.
 - 3) Other Class I, II and III liquids – 6 gallons.
- g) Except for farms, when kerosene is to be dispensed at unattended motor fuel dispensing facilities, only grade K-1 kerosene shall be dispensed.
- h) All unattended motor fuel dispensing facilities shall have installed and maintained equipment and systems that meet the requirements of subsection (h)(1) or (h)(2), although local governments may require option (h)(1) or (h)(2):
- 1) Unattended dispensing areas for Class I, II and III liquid motor fuels utilizing this option shall be protected by an automatic fire suppression systems meeting the standards of UL 1254 and NFPA 17. If a fire suppression system meeting these requirements is installed, no fire extinguishers are required. In the event of a fire suppression system discharge, the fuel dispensing facility shall not be returned to service until the suppression system is recharged and fully operational in the area protected by the system. The fire suppression system shall, when activated:
 - A) Automatically activate an emergency shutoff switch that is equipped so that all fuel dispensing units would be stopped by the activation.
 - B) Sound a local alarm notification device that is audible throughout the dispensing area and meets the requirements of NFPA 72.
 - C) Automatically transmit an alarm, through a system installed, tested and maintained according to NFPA 70 and 72, to local emergency fire services providers by sending a signal via one of the following mechanisms, which shall meet the requirements of NFPA 72:
 - i) Auxiliary alarm system;
 - ii) Central station alarm connection;
 - iii) Proprietary alarm receiving facility or system;
 - iv) Remote station alarm connection; or
 - v) Where the mechanisms in subsections (h)(1)(C)(i) through (iv) are not available, an alternate plan for notification of local emergency services meeting NFPA 70 and NFPA 72 and approved by OSFM in advance of the use.
 - D) Include extinguishing agent discharge nozzles mounted above dispensers and at or near ground level to discharge agent underneath vehicles being fueled.
 - 2) Unattended dispensing areas for Class I, II and III motor vehicle fuels electing this option shall be equipped with portable fire extinguishers and a fire detection system located under a weather enclosure canopy (unless written documentation is submitted verifying that the detection system will operate properly without a canopy).

- A) The system shall detect a fire in the dispensing area through the use of rate compensation, rate of rise or flame sensing detectors. The installation must meet the requirements of NFPA 72.
 - B) Activation of the system shall automatically activate an emergency shutoff switch that is equipped so that all fuel dispensing units would be stopped by the activation.
 - C) Activation of the system shall cause the sounding of a local alarm notification device audible throughout the dispensing area and meeting the requirements of NFPA 72.
 - D) Activation of the system, which shall be installed, tested and maintained according to NFPA 70 and 72, shall automatically transmit an alarm to local emergency fire services providers by sending a signal via one of the following mechanisms, which shall meet the requirements of NFPA 72:
 - i) Auxiliary alarm system;
 - ii) Central station alarm connection;
 - iii) Proprietary alarm receiving facility or system;
 - iv) Remote station alarm connection; or
 - v) Where the mechanisms in subsections (h)(2)(D)(i) through (iv) are not available, an alternate plan for notification of local emergency services meeting NFPA 70 and NFPA 72 and approved by OSFM in advance of the use.
 - E) Fire extinguishers meeting the requirements of 41 Ill. Adm. Code 174.350 shall be installed and maintained at each island and at the emergency shutoff switch. Cabinets, or other enclosures for extinguishers, shall not require breaking of glass or other acts that could injure users attempting to access the extinguishers, though doors, panels and local alarm systems may be provided for these enclosures at the owner's option.
- 3) The annual system testing required under NFPA 17 and NFPA 72 must be documented and the documents regarding this testing kept at the facility or available within 30 minutes or before OSFM completes its inspection, whichever is later.
 - 4) In meeting the requirements of subsections (c) and (h), facilities in existence as of September 1, 2010 shall have the option of complying with the editions of NFPA 17, NFPA 70 and NFPA 72 and UL 1254 incorporated by reference in 41 Ill. Adm. Code 174.210 or the OSFM alarm system and fire suppression and fire detection system requirements in effect at the time of their installation.
 - 5) Any changes to either fire suppression or fire detection systems and related alarms require that the facility notify OSFM in writing at least 60 days in advance of the change.

- i) At least once each year the facility shall verify that the alarm notification devices required under subsections (c) and (h) of this Section are working. The facility shall record the verification date and results on a record kept along with the other facility records.

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SECTION 175.230 FLEET VEHICLE MOTOR FUEL DISPENSING FACILITIES

Section 175.230 Fleet Vehicle Motor Fuel Dispensing Facilities

Fleet vehicle motor fuel dispensing facilities shall comply with all of the requirements for unattended self-service motor fuel dispensing facilities in Section 175.220, except that the signs required under Section 175.220(a) and the fire detection and fire suppression systems required under Section 175.220(h) shall not be required. Fleet facilities shall comply with requirements for portable fire extinguishers found in Section 175.220(h)(2)(E) and 41 Ill. Adm. Code 174.350. Other signage requirements under Section 175.220 (for example, that emergency shutoffs be conspicuously marked) shall still apply, along with the remainder of the requirements of Section 175.220.

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**SECTION 175.240 FULL SERVICE MOTOR FUEL DISPENSING FACILITIES AND
ISLANDS**

Section 175.240 Full Service Motor Fuel Dispensing Facilities and Islands

Full service motor fuel dispensing facilities and islands shall comply with all of the requirements for attended self-service motor fuel dispensing facilities in Section 175.210, with the following modifications or additions.

- a) A control station and audible communication system shall not be required at a full service motor fuel dispensing facility or island. The attendant shall, however, at all times be able to communicate with persons in the dispensing area. Facilities with dispensers that are not on a full-service island remain subject to the requirements for attended facilities under Section 175.210 for the dispensers that are not full-service.
- b) Minimum Signage. Signs shall be provided that are clearly visible to all self-service customers. The signs shall be mounted not less than 4 feet nor more than 6½ feet from the bottom of the sign to the ground and made of all-weather rigid material and the lettering shall be not less than 7/8 inch high. The signs shall, at a minimum, include the wording "No dispensing by anyone other than the attendant".

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SECTION 175.250 MARINE MOTOR FUEL DISPENSING FACILITIES**

Section 175.250 Marine Motor Fuel Dispensing Facilities

- a) Marine motor fuel dispensing facilities shall be of the attended type only. Self-service is prohibited.
- b) No vessel or marine craft shall be made fast to any other vessel or marine craft occupying a berth at a fuel dispensing location during fueling operations.
- c) Smoking materials, including matches and lighters, shall not be used within 20 feet of areas used for fueling, servicing fuel systems for internal combustion engines, or receiving or dispensing Class I liquids.
- d) The fuel delivery nozzle shall be put into contact with the vessel fill pipe before the flow of fuel commences and this bonding contact shall be continuously maintained until fuel flow has stopped to avoid possibility of electrostatic discharge.
- e) At all marinas, clearly identified emergency shutoff switches that are readily accessible in case of fire or physical damage at any dispensing unit shall be provided on each marine wharf and located at least 20 feet but not more than 100 feet from each dispenser, or at a location as approved by OSFM. The shutoffs shall be interlocked to shut off power to all pump motors from any individual location and shall be manually reset only from a master switch. Each emergency shutoff switch shall be identified by an approved sign on all-weather materials stating "MASTER ELECTRICAL SHUTOFF" or "EMERGENCY SHUTOFF SWITCH" in 2 inch red capital letters. Resetting from an emergency electrical shutoff condition shall require manual intervention by the owner or attendant and shall be accomplished only after the condition that caused it to be activated has been corrected. A master electrical shutoff means an emergency shutoff switch.
- f) All emergency shutoff switches shall be tested and all shear valves visually inspected at least annually to ensure that they are functioning properly and that the dispenser is mounted properly. Documentation of annual testing shall be kept at the motor fuel dispensing facility and available for examination by a representative of OSFM. If documentation of annual testing of emergency shutoff switches is not available, the facility shall be subject to demonstration of this equipment during inspection by OSFM.
- g) Minimum Signage. A conspicuous sign shall be mounted not less than 4 feet nor

more than 6½ feet above the base of the dispenser, or at a height approved by OSFM, on all-weather materials, visible in all directions, stating in prominent letters not less than 7/8 inch in height "No dispensing by anyone other than the attendant".

- h) Fire Extinguishers. Fire extinguishers shall be provided in accordance with 41 Ill. Adm. Code 174.350.
- i) Spill containment shall be provided on docks adjacent to dispensers to contain spills that may occur during the filling of approved portable containers. Portable containers of 12 gallons or less shall be filled on the dock where spill containment is provided.

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SECTION 175.260 MISCELLANEOUS GENERAL OPERATING REQUIREMENTS**

Section 175.260 Miscellaneous General Operating Requirements

- a) No motor vehicle or other craft shall be serviced with Class I, II or III fuel until motor and ignition have been shut off. Equipment or appliances utilizing pilot lights, arcing motors or similar devices shall be shut off (in addition to motors and ignitions) before servicing the vehicle.
- b) No smoking shall be permitted in the dispensing and vehicle service areas at any time.
- c) No open lights or flames shall be permitted on the premises, except in heating devices within station buildings.
- d) Premises shall be kept neat, clean and free from rubbish or loose trash. Brush, debris, wood chips, mulch and other combustibles shall not be located within 10 feet of dispensing areas or dispensers.
- e) Cleaning of station floors or premises with gasoline, naphtha or other Class I or Class II liquids shall not be permitted.
- f) Kerosene dispensers installed after April 1, 1995 shall not be located on the same island or within 20 feet of any petroleum or hazardous substance dispensers. Labeling of kerosene dispensers shall comply with the Space Heating Safety Act [425 ILCS 65], including the following requirements:
 - 1) where kerosene is offered for sale, a conspicuous notice shall be posted on all-weather materials and visible to all purchasers at the place of sale stating that the product is kerosene, and, in letters at least 3 inches in height, stating whether it is grade K-1 or K-2; and
 - 2) where K-2 kerosene is sold, an additional notice shall be posted on all-weather materials adjacent to or immediately below any listing of prices stating the following in letters 3 inches in height: "This is grade K-2 kerosene and it is not to be used in portable unvented kerosene heaters".
- g) All dispensing areas shall be provided with ample lighting.

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SECTION 175.300 PERMITTED UST ACTIVITY**

Section 175.300 Permitted UST Activity

Any UST activity or other permitted activity under this Section must comply with the following:

- a) Permit Requirements
 - 1) Prior to the onset of UST activity, a completed permit application, including fee payment of \$200 per permitted activity, shall be submitted to OSFM.
 - 2) A separate fee is required for each type of activity.
 - 3) This fee is to be paid by check or money order made payable to "Office of the State Fire Marshal" and is to be from the licensed contractor obtaining the permit.
 - 4) Only contractors currently licensed and certified in accordance with 41 Ill. Adm. Code 172 may obtain permits. Contractors are required to be OSFM licensed and have at least one employee doing the work who shall be certified under 41 Ill. Adm. Code 172 for the UST activity that is being performed. Contractor licensing applications and information can be found at www.state.il.us/osfm/forms/AppUSTContractorLicense.pdf and at www.state.il.us/osfm/PetroChemSaf/172%20Contractor%20Licensing%20Rules.pdf.
 - 5) Only contractors, their employees or subcontractors may perform the permitted UST activity in accordance with 41 Ill. Adm. Code 172.
 - 6) The current OSFM permit application forms for the given activity shall be submitted. Electronically reproduced forms shall be identical to the current OSFM-approved permit application forms at www.state.il.us/osfm/Techservices/application_forms.htm.
 - 7) Permit applications denied or rejected the second time will require a new permit application and submission of a new fee.
 - 8) Permit applications and issued permits are not transferable.
 - 9) The owner of the UST must be identified on the permit application.
 - 10) No permit may be issued when the current owner listed on the application owes fees

pursuant to Section 175.330 or 41 Ill. Adm. Code 176.450 until the fees are paid in full.

- 11) No permit may be issued for UST activity unrelated to correcting existing violations while the violations continue to exist on that same site.
- b) No UST activity requiring a permit may proceed without a granted permit in the possession of the contractor or representative of the contractor at the UST site, except pursuant to Section 175.710, and the permit shall be available to an OSFM representative, on request. For emergency repair procedures, see Section 175.710. Performance by a contractor of a UST activity in violation of this Section may result in the suspension or revocation of the license of that contractor to perform any UST activity pursuant to 41 Ill. Adm. Code 172.
- c) No UST owners or operators may perform any UST activity, unless the owner complies with the licensing and certification requirements of 41 Ill. Adm. Code 172.
- d) UST activity performed that is not in compliance with the conditions of a permit issued to a licensed contractor, or false information supplied to obtain a permit, is cause for permit revocation, or suspension or revocation of the license of the contractor to perform any UST activity.
- e) For purposes of this Section, the following terms shall be considered interchangeable or equivalent: "installer" and "replacer"; "install" and "replace"; "repairer" and "a person who upgrades"; "repair" and "upgrade"; "remover" and "a person who abandons-in-place"; and "remove" and "abandon-in-place".
- f) Actions Requiring a Permit. A permit is required to do any of the following to USTs:
 - 1) install new underground tanks or piping;
 - 2) remove tanks, piping or interstitial sensors;
 - 3) abandon-in-place a UST or piping;
 - 4) upgrade;
 - 5) repair, including flex connector replacement;
 - 6) line;
 - 7) inspect linings;
 - 8) emergency repairs;
 - 9) repair or install cathodic or corrosion protection, including on flex connectors;
 - 10) perform any hot work on a UST;
 - 11) installation, upgrade or removal of the following (except for any like-for-like replacements listed in subsection (g)):
 - A) leak detection systems (see Section 175.630(g), providing that existing interstitial monitoring sensors and systems cannot be removed);

- B) spill containment at the tank or remote fills; and
 - C) overfill prevention equipment;
- 12) dispenser activity that triggers the requirement to install under-dispenser containment under Section 175.410(d) and any new dispenser location;
 - 13) submersible activity that triggers the requirement to install a tank containment sump under Section 175.410(b);
 - 14) electronic enhancement of an automatic tank gauge (ATG) that requires work within the ATG control module;
 - 15) connection of a new or existing bulk load-out to a new or existing UST at a motor fuel dispensing facility.
- g) Actions Not Requiring a Permit.
- 1) No permit is required to do like-for-like replacements for the following:
 - A) submersible pumps, if already equipped with a tank containment sump;
 - B) spill containment devices (replacements shall be at least 5 gallons capacity);
 - C) drop tube valves;
 - D) ball floats;
 - E) ATG probes;
 - F) mechanical line leak detectors;
 - G) electronic line leak detectors;
 - H) wireless electronic line leak detectors;
 - I) rectifiers; or
 - J) interstitial monitoring sensors.
 - 2) The exceptions listed in subsection (g)(1) are the only exceptions from the permit requirement. If the equipment is not present or another type of equipment is to be used, a permit shall be required. Any pipe or flex connector work requires a permit. However, merely disconnecting a fitting, coupling or union without replacing that fitting, coupling or union to accomplish the replacement of the like-for-like equipment on the list in subsection (g)(1) will not by itself trigger the requirement for a permit. Although a permit is not required for like-for-like replacements, the work must still be performed by a licensed contractor. When product piping is broken or disconnected to perform a like-for-like replacement, the piping line must be precision tested as tight prior to putting the piping line back into service. Replacing any of the equipment listed in subsection (g)(1) must be reported in writing, within 24 hours after the activity, to OSFM, on forms provided by OSFM at www.state.il.us/osfm/PetroChemSaf/LikeForLike.pdf, listing the make, model and manufacturer of the equipment, and

indicating where the equipment is being installed. Copies of these notifications shall also be maintained at the site or available within 30 minutes or before OSFM completes its inspection, whichever is later, for a period of at least 2 years. For a list of the types of OSFM permits required for specific permitted UST activities, see Appendix B.

- h) Expiration and Extension of Permits. Permits expire 6 months from the date they are issued. The applicant may apply for additional 6-month extensions. Permit extensions that circumvent newly adopted technical requirements will not be allowed. If a party submits evidence of non-cancelable contracts executed in reliance on the permit sought to be extended, or if work has commenced, a party will not be viewed as circumventing the technical requirement. Each extension request must be submitted in writing before the permit lapses and must be accompanied by a \$200 fee.
- i) Amended Permits. Granted permits may be amended only once without a new application fee. For all permit amendments, each change that requires a new contractor, more than minor changes to the site plan, or another engineering review to determine acceptability will require submission of a new permit application and \$200 fee. "As-built" drawings reflecting any amendment to the site plan shall be submitted to OSFM within 10 days after the amendment. Permit amendments that circumvent newly adopted technical requirements will not be allowed.
- j) Site plans showing setback distances shall be submitted in triplicate, by the contractor listed on the permit application, to OSFM. Site plans are subject to approval by OSFM before any new construction, addition or remodeling that alters building size, when encroachment on required setbacks would occur; dispenser locations; or locations or sizes of vehicle service area or storage tanks. Removals, lining and upgrades that involve replacing equipment with that of identical manufacture and model do not require submission of site plans.
- k) Miscellaneous
 - 1) In the event that equipment requiring a permit is installed without a permit or in violation of the terms of the permit, the owner/operator will be required to do the following:
 - A) Hire an OSFM licensed contractor other than the person and company who did the unauthorized/non-permitted work.
 - B) Submit the proper permit application to OSFM and obtain approval from OSFM.
 - C) The work shall be uncovered as necessary to allow proper inspection of the UST installation or modification at issue and OSFM may require any changes necessary to bring the installation into compliance with 41 Ill. Adm. Code 160, 174, 175, 176, 177 and 180.
 - 2) When temporarily replacing a defective electronic line leak detector with a mechanical line leak detector, the contractor must notify OSFM in writing within 8 working hours after replacement, on a form provided by OSFM at www.state.il.us/osfm/PetroChemSaf/LikeForLike.pdf. Replacement of the temporary mechanical line leak detector with the final electronic line leak detector must be completed within 10 working days, and notification of this replacement shall be submitted to OSFM on a form provided by OSFM at www.state.il.us/osfm/PetroChemSaf/LifeForLike.pdf within the same 10 day period.

- 3) When piping is removed from an existing trench and replaced with new piping installed in another location at a site, both a removal and upgrade permit are required. However, where piping is removed from an existing trench and replaced with new piping installed in the same trench, only an upgrade permit is required, although at least one employee certified in the decommissioning module shall be required for the work.
 - 4) A valid permit does not remedy the technical compliance aspects of a violation until the work is completed and does not allow for any extensions of time for compliance. Completion of the work and a satisfactory OSFM final inspection does not preclude OSFM enforcement action against the person who illegally installed the equipment without a permit.
 - 5) A permit must be obtained prior to construction of a building or structure where loading and unloading or dispensing operations will occur. However, the permit will not require the customary permit fee, nor licensing or certification of a contractor, under this Section.
- l) Permits for Marinas. Due to the unique characteristics of the site at marina locations, additional information will be required as specified in this subsection (l) and as determined to be necessary by OSFM.
 - 1) Additional statements will be required as requested by OSFM to substantiate ownership or consent from authorities having jurisdiction over the waterway.
 - 2) Site Plans and Drawings. Detailed site plans and drawings shall be supplied as requested by OSFM to show length, width, location and configuration of the dock, type of construction, dispenser location and dispensing area, along with profiles of the UST indicating differences in elevation between tanks, piping and dispensers showing all valves, manholes, sumps, location of leak detection equipment, anti-siphon devices, pressure relief valves, pipe chases, sewage lines, etc. High water, low water and normal pool elevations shall also be given in relation to tank, piping and dispensers, along with any pertinent site characteristics.
 - m) Fleet mobile fueling sites and related contractors require a different permit under 41 Ill. Adm. Code 174.440 and 174.450.
 - n) In the event there is a delegation of authority to the City of Chicago to enforce UST rules and regulations, pursuant to the Gasoline Storage Act [430 ILCS 15/2], subject to the terms of that agreement, the City has the authority to modify subsections (a)(1) through (a)(10) of this Section to issue the permits and collect the fees for its own use, regarding UST activities within the jurisdiction of the City.

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SECTION 175.310 SITE PLANS**

Section 175.310 Site Plans

When OSFM permit application forms indicate that permit submittals must be accompanied by site plans, the following shall apply:

- a) Site plans shall be submitted simultaneously with associated permit applications and shall accurately reflect the scope and all components of the work involved.
- b) Site plans shall be submitted in triplicate, by the contractor listed on the permit application.
- c) Site plans shall be legible and sizes shall be 8½" x 11", 8½" x 14" or 11" x 17" only; blueprints are not acceptable as site plans.
- d) Site plans shall be drawn to an identified scale, or all dimensions shall be labeled to allow OSFM to determine compliance with applicable rules.
- e) Site plans shall indicate or contain the following information:
 - 1) The name of the OSFM-licensed contractor proposing the work;
 - 2) The name and address of the facility where the proposed work is to occur, including the location of the proposed work with reference to city, village or town;
 - 3) The plot to be utilized and its immediate surroundings on all sides. All property lines are to be designated and adjacent streets and highways shall be named, and legends or markings shall include a compass marking the directions of north, east, south and west;
 - 4) The components of the installation as proposed, including tanks and their capacities, name and class of liquids to be stored, piping, pumps, dispensers, buildings and all UST equipment. When partial piping is being installed or replaced, show total length of the entire piping run and identify the specific length and location of the portion of the piping that is being installed or replaced;
 - 5) Clearance from tanks and piping to property lines;

- 6) Clearances from tanks and piping to adjacent buildings;
 - 7) Separation distance between USTs when more than one UST is present;
 - 8) Location of driveways or paths for vehicle access;
 - 9) Location of existing piping trenches not being reused, existing trenches being reused, and new trenches where new piping is being installed;
 - 10) Location of electrical wiring and conduit, including an indication of the depth or elevation at which these components will be installed;
 - 11) Location of basements, cellars or pits of buildings on the property or on adjacent properties, and location of tanks and piping to allow OSFM to ensure compliance with Section 175.430. If buildings on the property or adjacent property have no basements, cellars or pits, a notation to that effect shall be made on the site plan;
 - 12) Location of sewers, manholes, catch basins, cesspools, septic tanks, wells or cisterns (whether on the property, on adjacent property or in adjoining streets, highways or alleys); whether the sewer is made of petroleum-resistant piping or material; and location of tanks and piping to allow OSFM to ensure compliance with Section 175.430. If there is no sewer, manhole or catch basin in a street or alley or no sewer, cesspool, septic tank, well or cistern on a property, a notation to that effect shall be made on the site plan;
 - 13) Location of UST vent piping, vent termination points, and any other vent outlets required by Section 175.440, including a clear indication of the elevation of vent termination points;
 - 14) Location of fill pipes, including remote fills, required by Section 175.445;
 - 15) Ventilation methods for grease pits or other below-grade areas required by Section 175.450(f);
 - 16) Location and form of all collision protection for dispensers and vent terminals; and
 - 17) Any other information pertinent to the installation to ensure that OSFM plan reviewers can determine compliance with applicable rules.
- f) In the event there is a delegation of authority to the City of Chicago to enforce UST rules and regulations, pursuant to the Gasoline Storage Act [430 ILCS 15/2], subject to the terms of the agreement, the City has the authority to modify this Section to change any reference to "Office of the State Fire Marshal" or OSFM to the appropriate City authority.

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SECTION 175.320 SCHEDULING OF UST ACTIVITY

Section 175.320 Scheduling of UST Activity

- a) All permitted activity shall be scheduled with OSFM. There are 2 sets of procedures for scheduling permitted activity, Operational Safety Inspection (OSI) or Performance Assurance Inspection (PAI). The procedures for scheduling OSI Activity (Date Certain) are set forth in subsection (c) and for PAI Activity (Date and Time Certain) are set forth in subsection (d). A contractor shall have at least one employee certified for the UST activity for which the permit was issued actively supervising in person the UST activity being performed on the site, unless the contractor is personally certified in the UST activity for which the permit was issued and is actively supervising the work. At all times during permitted activity, including at all STSS inspections, including any final inspection, there shall be an employee or individual contractor certified in the work to be done on the job site. Subcontractors are not "employees" for this purpose.
- b) No permitted and scheduled OSI or PAI activity can be performed outside the schedule unless changes have been approved in advance by OSFM. No more than 2 schedule changes will be allowed, except for new tank installations, for which 2 additional schedule changes may be used for final inspection only. Notice of cancellation must be received by OSFM at least one complete work day in advance of the scheduled date and time and the revised date of the work must be at least 2 complete working days after OSFM receipt of the revised job schedule request. The day of receipt is not included in the advance notice/receipt calculation. At the discretion of OSFM, adverse natural occurrences or other emergencies will allow a shorter time frame for cancellation and rescheduling. A new permit and fee will be required when there is a failure to meet any of the schedules. This includes not being present for inspection, not being completely ready for inspection, allowing permit to expire before completing the final inspection, or not canceling the job within the allowed time frame. Failure to meet the schedules also includes a failure to complete all UST work and site preparation necessary for the STSS inspection, including any necessary testing and related corrections, prior to the time the STSS is scheduled to first arrive. Upon these events, the permit is considered revoked and no work may commence until a new permit is issued and the work scheduled pursuant to this Section.
- c) OSI (Date Certain) Activity. OSI activity includes removal, abandonment-in-place, and any hot work. Any additional inspection in follow-up to tank penetration via hot work, including a final lining inspection and tank precision testing, shall be

scheduled as a PAI inspection. For a listing of OSI activities, see Appendix A to this Part.

- 1) For OSI activity, the contractor shall have a granted permit in his or her possession before calling OSFM between 8:30 a.m. and 3:00 p.m. on State business days to establish a mutually agreed specific date and time for the permitted activity.
 - 2) Only the contractor or an employee of the contractor (this does not include subcontractors) may schedule the work with OSFM.
 - 3) For OSI activity, the work will not be allowed to be done unless an STSS is on site.
- d) PAI (Time and Date Certain) Activity. PAI permitted activity includes installation, upgrades, flex connector activity, repairs not involving hot work, or cathodic protection activity. PAI activities will be scheduled for a period of at least 2 working hours (between 10:00 a.m. and 3:30 p.m. on State business days) and subsequent activities that interfere with the ability to inspect will not proceed until the time period is over. Regarding tank installation, scheduled OSFM inspections are required for an air test on the tank prior to installation, air test on primary lines, hydrostatic test on containments prior to backfill, tank installation, air test on secondary containment, and final inspection. For tank installation only, the completed Notification of Underground Storage Tanks form (www.state.il.us/OSFM/PetroChemSaf/Notify.pdf) must be ready to present to the STSS during the final inspection. For all other activity, both OSI and PAI, the appropriate OSFM notification forms at www.state.il.us/osfm/PetroChemSaf/home.htm, under "downloadable applications shall be completed and submitted to OSFM within 30 days after completion of the permitted work. Although tank and line tightness testing and cathodic protection testing and the cleaning of tank and line interstitial spaces following a release are not permitted activities, they must still be scheduled with OSFM pursuant to subsection (d)(2). For a listing of OSI activities, see Appendix A.
- 1) Permitted PAI Activity. The contractor shall have a granted permit in his or her possession and shall transmit to OSFM, not less than 5 working days after the approval date on the permit and not less than 2 working days before the anticipated date of work, by U.S. Mail, express mail, package service, fax, or email, a completed OSFM-prescribed job schedule form www.state.il.us/osfm/PetroChemSaf/home.htm, under "downloadable applications"). The Division of Petroleum and Chemical Safety (DPCS) will transmit a stamped acknowledgement receipt back to the contractor within one working day. A copy of this receipt, along with a copy of the permit, will be kept on the job site at all times. Work shall not commence until the contractor obtains this receipt. Only the contractor or an employee of the contractor (this does not include subcontractors) may schedule the work with OSFM.
 - 2) Non-permitted PAI Activity. The contractor or contractor's employee shall submit the OSFM-prescribed job schedule form (www.state.il.us/osfm/PetroChemSaf/home.htm, under "downloadable applications") at least 24 hours in advance of the anticipated work date. Only the contractor or an employee of the contractor (this does not include subcontractors) may schedule the work with OSFM.

- 3) For spill or overfill prevention device final PAI (Time and Date Certain) inspections, a contractor representative is not required to be on site, but scheduling of the final inspection is required.
 - 4) Any time an emergency repair permit is issued, the contractor shall schedule and complete the final inspection within 10 days after issuance of the permit.
- e) There shall be no transfer or sale of product from a UST until the UST is in compliance with OSFM rules and any required final inspection has been completed. Any request to fill a required minimal amount of fuel necessary to perform compliance testing must be submitted in writing and approved by OSFM in advance. A depositor may make one deposit of a regulated substance to a newly installed or newly lined tank to provide ballast; that fuel shall not be sold or dispensed until the required decal is obtained.
- f) In the event there is a delegation of authority to the City of Chicago to enforce UST rules and regulations, pursuant to the Gasoline Storage Act [430 ILCS 15/2], subject to the terms of that agreement and to the extent the City is authorized to supervise the above-referenced activities, the City is authorized to substitute, for references in this Section to OSFM or its agents or employees, comparable references to the City or its agents or employees.

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SECTION 175.330 PAYMENT OF 1988 ANNUAL UST FEE

Section 175.330 Payment of 1988 Annual UST Fee

The owner of any registered underground petroleum storage tank (excluding heating oil USTs for consumptive use on the premises where stored) in the ground at any time in 1988 and in operation at any time after January 1, 1974 shall pay a 1988 annual fee of \$100 per tank on or before 90 days from the date on the invoice requesting payment of the fee. The payment is to be by check or money order made payable to "Office of the State Fire Marshal".

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SECTION 175.400 DESIGN AND CONSTRUCTION OF USTs

Section 175.400 Design and Construction of USTs

- a) Tanks. Any newly installed or replaced underground tank shall be of double-wall construction and equipped with interstitial monitoring that meets the applicable requirements of Section 175.630(g) and 40 CFR 280.43(g) for all permits issued on February 1, 2008 and after. Any release into the interstice of any double-wall tank shall require that the interstice be cleaned under accepted engineering practices before the tank can be put back into service, the out-of-service period not to exceed one year. Although such work does not require a permit, the work must be scheduled with OSFM under Section 175.320 and the work must be done by a contractor that meets the licensing and certification requirements for a tank precision tester under 41 Ill. Adm. Code 176.470 and 41 Ill. Adm. Code 172. (See also Section 175.630(g).) If the interstice cannot be cleaned so as to allow proper functioning of the interstitial monitoring and the tank has been out-of-service for one year, then the tank shall be removed within 60 days. Third-party listed, factory manufactured, jacketed tanks having an interstitial space capable of being cleaned following any contamination shall be considered as meeting the double-wall requirement.
- b) Each newly installed, replaced and existing tank shall be properly designed, constructed and installed in accordance with a code of practice developed by a nationally recognized association or independent testing laboratory and third-party listed for its intended use. Any portion underground that routinely contains product shall be protected from corrosion. In addition, each tank shall meet one of the following requirements:
 - 1) The tank is constructed of fiberglass-reinforced plastic.
 - 2) The tank is constructed of steel and protected in the following manner:
 - A) Metallic tanks installed on or after April 21, 1989 shall be thoroughly coated on the outside with suitable rust-resisting dielectric material; and
 - B) All steel tanks shall utilize a cathodic protection system designed by a corrosion expert certified by NACE in cathodic protection design or by an Illinois Licensed Professional Engineer who has certification or licensing that includes education and experience in

corrosion control of buried or submerged metal piping systems and metal tanks. If an impressed current system is selected, it must also be designed to allow determination of the system's operating status by means of permanently installed lights and gauges as required in Section 175.510.

- 3) The tank is constructed of a steel-fiberglass-reinforced plastic composite.
 - 4) The tank construction and corrosion protection are determined by OSFM to be designed to prevent release or threatened release of any stored regulated substance in a manner that is no less protective of human health and the environment than this subsection (b). Before the installation of any tank, its construction and corrosion protection shall be submitted to OSFM, in writing, and is subject to written approval by OSFM.
- c) Re-certified tanks shall satisfy the requirements of subsection (b), and, on or after February 1, 2008, shall be double-walled with interstitial monitoring; however, written proof of re-certification shall be submitted to OSFM. Re-certified tanks must be reinstalled within 6 months after removal or re-certification, whichever is sooner. Re-certified tanks must have a warranty remaining for at least 5 years. Re-certifications must be conducted by a Licensed Professional Engineer having expertise in UST design or the original tank manufacturer.

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SECTION 175.405 SPILL CONTAINMENT AND OVERFILL PREVENTION
EQUIPMENT**

Section 175.405 Spill Containment and Overfill Prevention Equipment

- a) To prevent spilling and overfilling associated with product transfer to the UST, owners or operators shall use the following spill containment and overfill prevention equipment:
 - 1) Both:
 - A) Spill containment equipment that will prevent release of product to the environment when the transfer hose is detached from the fill pipe (e.g., a spill catch basin). As of May 1, 2003, new or replaced spill containment equipment must have a minimum 5 gallon capacity and be maintained in a dry, clean state; and
 - B) Overfill prevention equipment that:
 - i) Automatically shuts off flow into the tank when the tank is no more than 95 percent full; or
 - ii) Alerts 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; or
 - 2) Provides alternative methods that are no less restrictive than subsections (a) (1) and (a)(2) and no less protective of human health or the environment, as approved in writing by OSFM.
- b) Float vent valves for overfill prevention shall not be allowed on any type of suction system.
- c) A UST that is filled by transfers of no more than 25 gallons at one time shall require spill containment but does not require overfill prevention.
- d) In addition to the requirements of subsections (a), (b) and (c), waste oil tanks shall be equipped with spill containment devices at all fill and retrieval points.

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PART 175 TECHNICAL REQUIREMENTS FOR UNDERGROUND STORAGE TANKS
AND THE STORAGE, TRANSPORTATION, SALE AND USE OF PETROLEUM AND
OTHER REGULATED SUBSTANCES
SECTION 175.410 CONTAINMENT SUMPS**

Section 175.410 Containment Sumps

- a) On or after May 1, 2003, a tank containment sump must be installed at the tank on all new tanks with submersible pumps or American suction piping systems. All tank containment sumps must consist of a factory manufactured containment that is liquid-tight on its sides, bottom and at any penetrations and is compatible with the substance conveyed by the piping. European suction systems are not required to have this containment.
- b) When an existing submersible is removed and replaced with another submersible, or when piping, flex connectors or other transitional components at the submersible are replaced, a tank containment sump must be installed.
- c) On or after May 1, 2003, under-dispenser containment must be installed on all new dispenser installations where there previously was no dispenser. European suction systems are not exempt from the requirement for under-dispenser containment.
- d) When an existing dispenser is removed and replaced with another dispenser and equipment at or below the shear valve used to connect the dispenser to the UST is replaced, under-dispenser containment is required. This equipment may include flex connectors or risers or other transitional components that are beneath the dispenser and connect the dispenser to the piping.
- e) If more than 20 feet or 50% of a pipe run is replaced, the appropriate containment required to make the associated interstitial monitoring functional (e.g., a tank containment sump, under-dispenser containment, or a junction sump) shall also be installed.
- f) Water in Sumps
 - 1) Sumps Without Monitoring Sensors. If water is in a sump and it is in contact with bare metal piping or metal, including flex connectors, then corrosion protection, using impressed current, spike anodes, or wristband anodes with proper electrolyte, must be installed on the metal piping in accordance with Section 175.510.
 - 2) Sumps with Monitoring Sensors. Water that could interfere with the operation of double-wall interstitial monitoring systems or that is in contact

with bare metal piping or metal, including flex connectors, shall be permanently removed and the source of ingress repaired. The sump shall be maintained so that, other than internal condensation, there is no water in contact with bare metal.

- 3) Requirement for All Sumps. In all cases, sumps shall be maintained and repaired using petroleum compatible materials as necessary so that, in the event of a release, product will not be leaked out of sumps via cracks, broken seals or other openings.
- g) Field-installed Spray-on or Pour-on Materials in UST Containment Sumps. All required containments shall be factory manufactured containments resistant to petroleum and chemical products. The application of any material shall not interfere with the normal operation of the shear valves or fusible links, or any equipment installed under dispensers or submersible pumps.
 - h) A hydrostatic test will be performed on all containment installations (including all submersible, piping and fill sumps) as follows:
 - 1) All penetrations, including electrical, must be completed prior to testing.
 - 2) Containment is to be filled with water to a height that covers the highest penetration by 2 inches.
 - 3) Minimal backfilling that may be necessary for support of the containment sump is allowed prior to the test.
 - 4) Test duration is 30 minutes and performed under PAI Time and Date Certain requirements with no drop in water level.

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SECTION 175.415 UST COMPATIBILITY WITH PRODUCT STORED**

Section 175.415 UST Compatibility with Product Stored

- a) Owners and operators shall use a UST compatible with the product stored in the UST.
- b) All UST components shall be listed for compatibility with the product being stored by a nationally recognized independent third party organization. In the event the third party listing is unattainable for a UST component, for petroleum products only, OSFM may accept certification of the non-listed component by a Licensed Professional Engineer that the non-listed component is compatible with the product that will be stored.
- c) In the event third party listing and certification by a Licensed Professional Engineer are both unattainable for a leak detection device or dispenser, for petroleum products only, OSFM may permit the use of the non-listed and non-certified component if a licensed installation/retrofitting contractor inspects the component on an annual or more frequent basis and, after each inspection, certifies to OSFM on forms provided by OSFM at www.state.il.us/osfm/PetroChemSaf/home.htm, under "downloadable applications", that the component has been inspected and there is no visible evidence of product leakage or release or other operational problems. Copies of these certifications provided to OSFM shall be maintained at the site or available within 30 minutes or before OSFM completes its inspection, whichever comes later, for at least a 2-year period. In the event that a listed component becomes available, facilities shall have 12 months to replace non-listed components with listed components.
- d) New installations or new conversions to blended fuel (as defined in 41 Ill. Adm. Code 174.100) shall comply with the following:
 - 1) OSFM will permit a blended fuel to be stored in steel tanks, or any fiberglass tanks manufactured after 1991 if certified by the manufacturer as compatible with the product stored.
 - 2) The associated piping must be steel or fiberglass piping manufactured after 1991.
- e) Existing USTs Previously Converted to a Blended Fuel (as defined in 41 Ill. Adm. Code 174.100). In those instances in which a blended fuel is being stored in an

existing tank lined at any time, the lining material must be approved by OSFM based on information supplied by the manufacturer or a Licensed Professional Engineer, in accordance with the criteria identified in Section 175.500, as compatible with the blended fuel, or the owner/operator must remove the blended fuel from the tank. Existing field installed linings shall be allowed to remain but shall comply with the requirements of Section 175.500, including requirements for 5-year inspections by a certified contractor. New field-installed linings for compatibility purposes only are allowed after January 1, 2011 subject to the following requirements:

- 1) The lining material shall be compatible with the product stored, as established by proof of compatibility from the lining manufacturer;
 - 2) All linings must comply with the requirements of Section 175.500, including requirements for lining inspections under Section 175.500(b) that must take place within 5 years after initial lining and every 5 years thereafter;
 - 3) Linings that fail for any reason may not be touched up, repaired or totally relined and tanks failing any lining inspection shall be removed within 60 days; and
 - 4) These provisions, allowing new linings for compatibility purposes only, shall not be used to circumvent prohibitions against lining tanks for purposes of corrosion protection or repair after January 1, 2011. A steel tank shall be deemed compatible with all motor, alternative and blended fuels in the absence of a detailed engineering evaluation by an Illinois Licensed Professional Engineer establishing that there is a compatibility issue.
- f) **Blended Fuels and Compatibility.** Materials and leak detection equipment that is listed as compatible with gasoline and/or petroleum diesel will be permitted to be used with gasoline/ethanol or diesel/biodiesel blends that are less than 21% ethanol or biodiesel blend, respectively. Materials and leak detection equipment that is listed as compatible with a certain percentage of product (i.e., E85, B30, B50) may be used with blends that are less than the blended fuel percentage listed. As an example, line leak detection equipment listed as compatible with E85 may be used with all E blends of 85% or less. The same is true for B blends. Line leak detection equipment listed as compatible with B50 may be used with all B blends of 50% or less.

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SECTION 175.420 PIPING**

Section 175.420 Piping

- a) Piping that routinely contains regulated substances and is in contact with the ground, backfill or water shall be properly designed, constructed and protected from corrosion in accordance with a code of practice developed by a nationally recognized association or independent testing laboratory, shall be third party listed for its intended use, and shall also meet the requirements of subsection (a)(1), (a)(2) or (a)(3):
 - 1) The piping is constructed of fiberglass-reinforced plastic.
 - 2) The piping is constructed of steel and protected as follows:
 - A) The piping is coated with a suitable dielectric material, if installed on or after April 21, 1989; and
 - B) All steel piping utilizes a cathodic protection system designed by a corrosion expert certified by NACE in cathodic protection design or by an Illinois Licensed Professional Engineer who has certification or licensing that includes education and experience in corrosion control of buried or submerged metal piping systems and metal tanks. If an impressed current system is selected, it must also be designed to allow determination of system operating status by means of permanently installed lights, amp, volts and hour gauges as required in Section 175.510.
 - 3) The piping construction and corrosion protection are determined by OSFM to be designed to prevent release or threatened release of any stored regulated substance, in a manner that is no less protective of human health and the environment than the requirements in subsections (a)(1) and (a)(2). Before the installation of any such piping, its construction and corrosion protection shall be submitted to OSFM, in writing, and OSFM shall issue written approval.
- b) Installed underground piping shall be of double-wall construction and equipped with interstitial monitoring that meets the applicable requirements of Section 175.630(g) and 40 CFR 280.43(g) for all permits issued February 1, 2008 and after. When required to make interstitial monitoring functional, the appropriate

containment (e.g., under-dispenser containment, tank containment sumps, or junction sumps) shall be installed. Any replaced piping that exceeds 20 feet or 50% of the total piping run shall require the entire pipe run to be replaced with double-wall, monitored piping as required for newly installed piping. If the site has multiple distinct pipe runs, only that piping run being replaced shall be required to be double-wall construction with interstitial monitoring installed in compliance with this subsection (b). Any release into the interstice of any double-wall piping shall require that the interstice be cleaned under accepted engineering practices before the piping run can be put back into service. Although this work does not require a permit, the work must be scheduled with OSFM under Section 175.320 and the work must be done by a contractor that meets the licensing and certification requirements for a tank precision tester under 41 Ill. Adm. Code 176.470 and 41 Ill. Adm. Code 172. (See also Section 175.640.) If the interstice cannot be cleaned so as to allow proper functioning of the interstitial monitoring, then the piping shall be replaced. European suction systems are exempt from the requirement for having double-wall product piping, as well as from the requirement for having interstitial monitoring.

- c) Piping, valves and fittings for flammable liquids shall be designed for the working pressures and structural stresses to which they may be subjected and third party listed for their intended use. The application of any material shall not interfere with the normal operation of the shear valves, fusible links or any equipment installed under the dispensers or submersibles. They shall be of steel or other materials suitable for use with the liquid being handled.
- d) All piping shall be located so as to be protected from physical damage. Pipe trenches and pipe installation shall meet manufacturer's specifications for depth, width, slope, spacing and placement of pipe. Joint adhesive and thread sealant shall meet manufacturer's requirements for the regulated substance stored and/or transported by the pipe.
- e) Pressurized piping systems (including existing systems) shall also be equipped with automatic line leak detectors (see Section 175.640(a)). After installation, pressurized piping shall be tested for 30 minutes at 1.5 times the working pressure or 50 psi, whichever is higher. Suction and vent piping shall be tested at a minimum positive pressure of 7 psi or in accordance with the manufacturer's recommended procedures.
- f) All steel risers, vents and fills in contact with the ground, backfill or water shall be dielectrically wrapped or coated.
- g) Beginning May 1, 2003, a positive shutoff valve shall be installed on the product line at the submersible or at the tank for all suction systems on all new installations and when piping is replaced at existing sites and made accessible at grade. An extractor valve will be accepted on European suction instead of a positive shutoff valve.
- h) Vent lines will be tested from the tank to grade level at the time of installation. This test will be done at 7 psi minimum or at the pressure recommended by the manufacturer. This test will be performed at the time of the line PAI test.
- i) The application of any material shall not interfere with the normal operation of the shear valves or fusible links, or any equipment installed under dispensers or submersibles.

- j) Any time product piping is broken for repairs, a precision line tightness test must be conducted before the piping is put back into service.
- k) Beginning May 1, 2003, the new installation or total upgrade of product piping shall be double-walled for the entire length of that product line, with the exception of European suction.

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SECTION 175.425 UST WIRING PROCEDURES**

Section 175.425 UST Wiring Procedures

- a) Unless otherwise specified in this Section, all wiring at UST locations shall be in accordance with the Edition of NFPA 70 in force at the time of installation of the electrical equipment.
- b) Wiring within 20 feet of tanks and product piping, dispenser pumps or product lines shall be installed in rigid metallic conduit, threaded steel conduit, or any petroleum or product resistant rigid nonmetallic conduit listed and manufacturer-approved for that use. Rigid nonmetallic conduit must have written verification of its approval for petroleum or other product use. The approval must be via manufacturer's certification or third-party listing and must be kept on site and must be submitted with any applicable permit application. Electrical conduit shall maintain at least 6 inches of separation from product piping to avoid damage from abrasion or stray electrical current and shall be routed in compliance with subsection (e) when it becomes necessary to locate electrical wiring in the same trench as product piping.
- c) A minimum of 24 inches of cover is required over all UST wiring conduit. When rigid nonmetallic conduit is used, threaded rigid metal conduit or threaded steel intermediate metal conduit shall be used for the last 2 feet of the underground run to emergence or to the point of connection to the aboveground raceway.
- d) Intrinsically safe wiring shall be in conduit when installed within Class I locations, as specified in NFPA 70. Caution shall be taken when grounding not to impair cathodic protection of metallic tanks or piping.
- e) When locating electrical wiring in the same trench as the product lines, the conduit shall be positioned on either side of the product piping but not above or below the product piping. The electrical conduit shall cross over the top of any product piping whenever a crossover is necessary, unless all fittings in the conduit run are liquid-tight. A minimum 6-inch separation shall be maintained at all times, even during a crossover. All crossovers shall be kept to a minimum.
- f) All electrical power shall be shut off at the immediate location where installations, repairs or upgrades are in progress.
- g) All electrical seal-offs are to be properly filled whether being used or for future use.

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SECTION 175.430 CLEARANCE REQUIRED FOR USTS**

Section 175.430 Clearance Required for USTs

- a) Distance to Basements. No UST shall be less than 20 feet from any basement, cellar, pit or below-grade excavation on or off the property.
- b) Distance to Sewers. Individual tanks and piping shall be buried so that the tops of the tanks and piping are lower than the bottom level of all sewers, manholes, catch-basins, cesspools, septic tanks, septic tank clean out stations, wells or cisterns within 20 feet, on or off the property, or tanks and piping shall maintain a full clearance of 20 feet. The term "sewer" includes sanitary and storm sewer lines out of motor fuel dispensing facilities and bulk facilities. These clearances shall not be required when a sewer line is constructed throughout of petroleum resistant piping.
- c) Distance to Property Lines. Individual tanks shall be at least 20 feet to property lines; provided, however, that these clearances on the side adjacent to a public street, alley or highway are waived by consent of the authority having immediate jurisdiction over the public street, alley or highway, provided that the required sewer clearances will be maintained.
- d) Distance to Special Classes of Property. Tanks and dispensers shall maintain a clearance of not less than 300 feet to any mine shaft, air or escape shaft for any mine and 85 feet to any educational, health care or assembly occupancy, as defined in 41 Ill. Adm. Code 100. The distance shall be measured from the nearest points of tanks and pumps to the nearest points of buildings or shafts.
- e) Tanks in service on October 1, 1985 (or after October 1, 1985 if approved by OSFM) may maintain existing underground tank clearances. Basements at motor fuel dispensing facilities existing on October 1, 1985 less than 20 feet from a UST shall be provided with mechanical ventilation. Only non-sparking explosion proof motors and compressors shall be permitted in these basements. Proof of compliance shall be submitted to OSFM.
- f) Except for the 20-foot clearance distance to basements, the clearances required under this Section shall not be required when both tanks and piping are double-walled with interstitial monitoring. For these USTs, the minimum clearance shall be such as to avoid projecting loads onto underground sewers, utilities and other structures. The clearance must also be sufficient to ensure that site activity does not undermine the UST backfill materials (for example, pea gravel base) for any UST

once in place.

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SECTION 175.435 PRESSURE TESTING OF TANKS OR LINES

Section 175.435 Pressure Testing of Tanks or Lines

The use of air or non-inert gases to pressure test underground storage tanks or piping containing, or that have contained, flammable or combustible liquids is prohibited. Approved tank or line-tightness testing with inert gases (nitrogen and helium) may be utilized. Preliminary air tests may be used for tanks cleaned and vapor freed for the purposes of testing coverplates or gaskets.

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SECTION 175.440 VENTING OF TANKS**

Section 175.440 Venting of Tanks

- a) Normal Venting
 - 1) Each tank shall be provided with a separate normal working vent pipe, connected with the top of the tank and carried up to the outer air. Underground manifolding of normal working vents is prohibited. The pipe shall be arranged for proper drainage to the storage tank, and its lower end shall not extend through the top of the tank for a distance of more than one inch; it shall have no traps or pockets. Float vent valve overfill devices are not considered an extension of the standard vent. ManifolDED normal vents existing and previously approved by OSFM prior to April 1, 1995 may be left in place, provided that the vents can be shown, by field verification, to comply with OSFM rules at the time of approval.
 - 2) The upper end of the pipe shall be provided with an updraft vent device only, with 40 gauge screening, unless alterations are required by Stage II Vapor Recovery requirements. A pressure vacuum vent will meet this requirement.
 - 3) The vent pipe shall be of sufficient cross-sectional area to permit escape of air and vapor during the filling operation and in compliance with NFPA 30, incorporated by reference in 41 Ill. Adm. Code 174.210, and in no case less than 1¼" in diameter. If a power pump is used in filling the storage tank, and a tight connection is made to the fill pipe, the vent pipe shall not be smaller than the fill pipe.
 - 4) The vent pipe shall terminate outside buildings at a point at least one foot above the level of the highest remote fill or any fill from which the tank may be filled, not less than 12 feet above the adjacent ground level and not less than 5 feet, measured vertically and horizontally, from any window or other building opening, such as a basement, cellar, pit, ventilated soffit or air intake of any building, and in a location that will not permit pocketing of vapor or liquid. The vent piping shall project above any canopy fascia no less than 4 feet.
 - 5) No vent piping is allowed inside buildings. Existing vent piping inside buildings may remain if approved, in writing, by OSFM.

- 6) Adequate collision protection to protect against physical damage shall be provided for vent piping.
 - 7) Hazardous substance tanks shall be vented in accordance with a nationally recognized standard for the substance contained within the tank or as approved by OSFM to be no less protective of human health or the environment.
- b) Special Purpose Vents
- 1) Manifolding of special purpose vents, such as for vapor recovery, is allowed in accordance with NFPA 30.
 - 2) Manifolding of normal working vents aboveground, for the purpose of being tied into a Stage II Recovery System, is allowed providing the following steps are followed:
 - A) Manifolding will be installed no less than 3 feet above grade and no more than 5 feet aboveground.
 - B) Each vent shall be capable of being separated and isolated from the manifold.
 - C) Class II and III products cannot be attached to a manifold that includes Class I products.
 - D) Final riser shall be of adequate sizing as specified by NFPA 30.

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SECTION 175.445 FILL PIPES**

Section 175.445 Fill Pipes

- a) Fill pipes shall be extended to a location outside of any building, as remote as possible from any doorway or other opening into any building, and in no case closer than 5 feet from any such opening. Remote fills are subject to approval by OSFM, on a case by case basis. Fill pipes for used oil tanks are permissible when located inside buildings.
- b) Location shall be in a place where there is a minimum danger of breakage from trucks or other vehicles and adequate collision protection to protect against physical damage shall be provided.
- c) For new and existing facilities, each fill pipe shall be closed by a gasketed screw cap or other tight fitting gasketed cap of a type that can be locked. It is the responsibility of the owner/operator to maintain the security of the UST.
- d) Each loading pipe or fill pipe riser shall be identified by color code or labeling to indicate the product contained in the tank.
- e) All remote fills installed after May 1, 2003 shall be double-wall and constructed of noncorrosive material or cathodically protected, except for gravity flow waste oil.
- f) After May 1, 2003, any new installation with a remote fill over 20 feet in length shall have interstitial monitoring and an audible and visible overfill alarm. Remote fills shall be sloped back to the tank.
- g) Beginning February 1, 2008, on all new installations where non-metallic piping is used for a remote fill, a grounding station shall be installed and used during delivery.
- h) Except for USTs holding waste oil, all tanks shall be equipped with a drop tube that extends to within 6 inches of the bottom of the tank.

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SECTION 175.450 PUMPS, DISPENSERS AND OTHER PRODUCT TRANSFER
EQUIPMENT

Section 175.450 Pumps, Dispensers and Other Product Transfer Equipment

- a) Pumps. Petroleum and hazardous substances shall be transferred from tanks by means of fixed pumps designed and equipped to allow control of the flow and to prevent leakage or accidental discharge. Systems that employ continuous air pressure on storage tanks in connection with gauging or vending devices are prohibited, with the exception of those systems utilized in Stage II Vapor Recovery.
- b) Gravity Flow Prohibitions and Precautions
 - 1) Devices that discharge by gravity are prohibited and were to have been removed by January 1, 1986. The transfer of waste motor oil to or from USTs is not subject to the requirements for transfer by means of fixed pumps. Gravity transfer of waste motor oil is permitted. Gravity devices at motor fuel dispensing facilities, bulk facilities, motor vehicle repair shops and parking garages that are retained for their novelty or historical interest may be retained at the facility, but shall be rendered nonfunctional.
 - 2) Where tanks are at an elevation that produces a gravity head on the dispensing device, the tank outlet shall be equipped with a device, such as a solenoid valve, positioned downstream as close as possible to the tank, installed and adjusted so that liquid cannot flow by gravity from the tank.
- c) Siphon Bars. Siphon bars that are used to transfer petroleum and hazardous substances between tanks by means of gravity or negative atmospheric pressure shall be permitted subject to the following requirements:
 - 1) The height of the tops of all tanks connected by the siphon bars shall be within 6 inches of each other;
 - 2) Piping shall meet the requirements of Section 175.420; and
 - 3) Release detection methods for tanks and piping shall be of a type approved for tanks connected by siphon bars, in accordance with Section 175.630.
- d) Electrical Equipment and Requirements for Pumps and Dispensers. All pumps and dispensing devices for petroleum and hazardous substances and all connected

electrical equipment shall be installed in accordance with Section 175.425. Dispenser discharge nozzles shall be constructed of nonferrous material or equipped with static wire hose.

- e) Dispensers. All dispensers shall be required to comply with the following:
- 1) Under-dispenser Containment. Under-dispenser containment is required pursuant to Section 175.410.
 - 2) Labeling. All dispensing devices used for drawing regulated substances from USTs shall be labeled in a conspicuous place with the name of the product.
 - 3) Size Limits. With the exception of industrial or fleet facilities with no connection to any UST from which regulated products are sold at retail, dispensers shall not be connected, directly or indirectly, to any tank that is over 30,000 gallons capacity.
 - 4) Hoses and Reels. Mechanical retractable devices are required on dispenser hoses in excess of 18 feet in length. Hose length on mechanical retractors shall not exceed 50 feet without written approval of OSFM. Detection of any of the following conditions indicates permanent damage and shall require that the hose be replaced with the nozzle immediately bagged if any portion of the hose or nozzle is actively leaking:
 - A) hose cuts, abrasions or cracks in the hose cover that penetrates to the reinforcement;
 - B) blisters or loose cover;
 - C) soft spots in the hose, particularly adjacent to the coupling;
 - D) indication of coupling slippage or irregular coupling alignment; or
 - E) flattened or kinked hose resulting in permanent deformation.
 - 5) Third-party Listed Latch-open Devices. When dispensing liquids into motor vehicle fuel tanks, dispenser nozzles shall be either manually held open or may be held open by a latch-open device that is an integral part of the listed nozzle assembly. An automatic self-closing type nozzle with a latch hold open device must be installed as an integral part of the listed nozzle assembly.
 - 6) The dispensing nozzle must be an automatic closing type that has been tested and is third party listed for its intended use.
 - 7) Prohibition on Unapproved Hold-open Devices. Temporary, portable or removable hold-open devices, including, but not limited to, plastic hooks, wires, wood blocks, gas caps and similar devices, shall not be used on dispenser nozzles. No person shall market, expose for sale, sell or distribute by any means whatsoever, in the State of Illinois, any temporary, portable or readily removable device designed or intended to be used for the purpose of holding open flammable or combustible liquid dispensing nozzles during dispensing operations at motor fuel dispensing facilities.

- 8) Requirements for a Secondary Means of Control. Any dispensing devices from which the flow of product is normally stopped by means other than by the closure of the nozzle valve shall further comply with either of the following:
 - A) The system shall be provided with equipment with a feature that causes or requires the closing of the nozzle valve before product flow may be resumed or before the nozzle can be replaced in its normal position in the dispenser; or
 - B) The nozzle valve latch-open device shall be removed.
- 9) Flow Shutoff
 - A) Hose nozzle valves shall be of the type that will close automatically, independent of the latch-open device, upon loss of pressure in the dispensing system. The latch-open device may only be engaged when the dispensing system is under pressure.
 - B) All dispensing devices shall be equipped with 2 methods of controlling the flow of fuel:
 - i) deactivation of the dispenser; and
 - ii) closing of the hand nozzle or some other secondary means to shut off flow.
 - C) The nozzle must be designed and maintained to cease the flow of product if the nozzle falls to the ground from the fill pipe of the motor vehicle being fueled.
 - D) A listed emergency breakaway device designed to retain liquid on both sides of the breakaway point shall be installed on each hose. If hoses are attached to a hose-retrieving mechanism, the listed emergency breakaway device shall be installed between the point of attachment of the hose-retrieving mechanism to the hose and the hose nozzle valve.
 - E) A control shall be provided that will permit the pump to operate only when a dispensing nozzle is removed from its bracket or normal position with respect to the dispensing device, and the switch on the dispensing device is manually activated. This control shall also stop the pump when all nozzles have been returned, either to their brackets or normal nondispensing position.
- 10) Rebuilt Hose Nozzles. Rebuilt hose nozzles may be used if they are listed for that purpose.
- 11) Spout Anchor Springs. Nozzles must be equipped with devices (e.g., wire or a spout anchor spring) designed to retain the nozzle spout in the vehicle fill pipe while refueling. These devices must be part of the listed nozzle assembly. The spout anchor spring shall be of the type recommended by the manufacturer of the hose nozzle valve and be installed and maintained in

accordance with the manufacturer's recommendations. Vacuum assist and balanced type vapor recovery nozzles prohibited from having wire or spout anchor springs as the result of their design shall be exempt from this requirement.

- 12) Shear Valve. Pressurized piping systems require a listed rigidly anchored emergency shutoff (shear) valve installed in the supply line at the base of each individual dispenser. The valve shall incorporate a fusible link or other thermally activated device, designed to close automatically in the event of severe impact or fire exposure.
- 13) Emergency Shutoff for Remote Pumps. Devices served by remote pumps shall be equipped with a listed emergency shutoff valve.
- 14) Collision Protection for Dispensers. All fuel dispensers shall be mounted or protected against collision damage by means of islands, posts or an equivalent means.
- 15) Secure Mounting of Dispensers. Dispensing devices shall be bolted to their mounting surface in accordance with the manufacturer's instructions.
- 16) Under-dispenser containments shall be factory manufactured and shall comply with the design requirements of Section 175.410(g).

f) Location of Pumps and Dispensers

- 1) Unless otherwise allowed under this Section or permitted at the time of installation, dispensers and pumps shall be located outside of buildings. Dispenser hoses shall not be able to reach to within 5 feet from any building or window or other building opening, such as a basement, cellar, pit, ventilated soffit or any air intake or exhaust of any building, and must be located to avoid pocketing of vapor or liquid. Dispensers installed after October 1, 1985 shall not be located below grade. A transfer pump is not considered a dispenser and may be located inside a pumphouse or industrial building. Bulk-load outs are not considered dispensing and shall comply with NFPA 30 (see Section 41 Ill. Adm. Code 174.310).
- 2) However, detached buildings separated by at least 20 feet from other buildings and used exclusively for fleet dispensing of motor fuels may house dispensers and dispensing equipment for combustible liquids (Class II and III) so long as the buildings and equipment are in compliance with NFPA 30A, incorporated by reference in 41 Ill. Adm. Code 174.210.
- 3) Indoor dispensing shall otherwise be allowed only if approved by OSFM in writing prior to November 29, 1993 and if the following requirements are met:
 - A) For dispensing units existing prior to September 15, 1978:
 - i) be separated from other areas by 2 hour fire resistive construction;
 - ii) be provided with a mechanical or gravity ventilation system electrically interlocked with the dispensing units so that the

dispensing units cannot be operated, unless the ventilation fan motors are energized and operating. The system shall be upgraded to meet NFPA 30A not later than September 1, 2011; and

iii) have all openings beneath dispenser enclosures sealed to prevent the flow of leaking fuel to lower building spaces.

B) For dispensers existing as of October 1, 1985 and located within repair and parking garages:

i) be not below grade;

ii) be separated from motor vehicle repair areas, pits and basements by 2 hour fire resistive construction;

iii) be protected against physical damage from vehicles by mounting the dispensing unit on a concrete island or by equivalent means;

iv) be located in a position where the dispensers and pumps cannot be struck by an out-of-control vehicle descending a ramp or other slope;

v) be provided with an approved mechanical or gravity ventilation system, that shall be upgraded to meet NFPA 30A by not later than September 1, 2011; and

vi) be provided with a clearly identified emergency shutoff switch, readily accessible in case of fire or physical damage to any dispensing units to shut off the power to dispensing units.

C) Existing dispensing units located below grade in repair and parking garages as of October 1, 1985 shall have independent mechanical ventilation systems and the entire dispensing area shall be protected by an automatic sprinkler system conforming to the requirements of NFPA 13, incorporated by reference in 41 Ill. Adm. Code 174.210. The sprinkler system shall be interconnected to an alarm system conforming to NFPA 72, incorporated by reference in 41 Ill. Adm. Code 174.210, and the sprinkler system shall be a wet system except in unheated areas. Facilities in existence as of September 1, 2011 shall have the option of complying with the Edition of NFPA 72 incorporated by reference in 41 Ill. Adm. Code 174.210 or the NFPA alarm and sprinkler system requirements in effect at the time of their installation.

i) The ventilation systems shall be electrically interlocked with the gasoline dispensing units so that the dispensing units cannot be operated unless the ventilation fan motors are energized and operating, and shall be upgraded to meet NFPA 30A by not later than September 1, 2011.

ii) Existing dispensing units located below grade within

buildings shall also comply with subsection (f)(3)(B), as applicable.

- 4) Curb pumps or pumps located in any portion of a public street are prohibited, except that devices at motor fuel dispensing facilities, bulk facilities, vehicle repair garages and parking garages that are retained for their novelty or historical interest may be retained at the facility if rendered nonfunctional.
- 5) Dispensing devices at a motor fuel dispensing facility shall be located so that all parts of the vehicle being served will be on the premises of the facility or garage.

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SECTION 175.455 USTS INSIDE OR UNDER BUILDINGS**

Section 175.455 USTs Inside or Under Buildings

- a) The floor level under which a UST is located shall be above grade to prevent the flow of liquids or vapors into buildings, and the floors shall be of concrete or other fire resistant construction.
- b) Beginning April 1, 1995, no buildings or structures shall be constructed on top of any UST, including any heating oil USTs and pre-'74 USTs. Beginning April 1, 1995, no new UST shall be installed under any building. Any existing USTs installed prior to April 1, 1995 that are located under buildings shall be located, with respect to existing building foundations and supports, so that the loads cannot be transmitted to the tank. Beginning April 1, 1995, no existing UST located under a building shall be replaced in a manner that will allow the tank or piping to be located under a building. If a building with a basement, cellar or excavation is removed, the basement, cellar or excavation shall be filled in prior to construction of any new building over the basement, cellar or excavation.
- c) No USTs or dispensers containing motor fuel shall be installed inside buildings, except as authorized under Section 175.450(f).
- d) No underground product piping connecting USTs or dispensers that contain fuel shall be installed or routed under buildings after September 1, 2010, except that used oil UST piping with an inside fill may be permitted with OSFM approval signified on the applicable permit.
- e) If OSFM determines that a release from a UST under a building or structure, including any heating oil UST and pre-'74 UST, poses a current or potential threat to human health and the environment, or any UST, including any heating oil UST and pre-'74 UST, is damaged or found damaged during excavation or other site activity, OSFM may require the UST to be removed.

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SECTION 175.460 MARINAS**

Section 175.460 Marinas

- a) Dispensing equipment at marine motor fuel dispensing facilities shall comply with the requirements of Section 175.450(e), with the additions or modifications specified in this Section. Marine motor fuel dispensing facilities shall also comply with Section 175.250.
 - 1) Dispensing devices at marine motor fuel dispensing facilities may be located on open piers, wharves or floating docks, on shore, or on piers of the solid-fill type and shall be located away from other structures to provide room for safe ingress and egress of craft to be fueled.
 - 2) Under-dispenser containment shall be required for dispensers.
 - 3) A mechanical return reel shall be required for hose lengths in excess of 18 feet. All hose shall be secured and protected from damage and shall not be permitted to lie in the water or on the ground in a manner that is unprotected from accidental damage.
 - 4) Dispenser nozzles shall be of the automatic closing type; hold-open clips or devices shall not be allowed.
- b) Piping and Shutoff Valves
 - 1) Anti-siphon devices such as solenoid valves shall be required when the piping slopes downward from the tank.
 - 2) Floating docks or structures shall require flexible lines from shore to dock. Suitable lengths of approved flexible hose may be employed between the shore piping and the piping on the floating structure, as made necessary by change in water level or shoreline. Any product supply line shall have secondary containment, and new installations must be double-wall after April 1, 1995. Flexible connectors shall be required at dock hinge points for rigid primary.
 - 3) All aboveground piping shall have proper hangers or mounts and shall be protected from physical damage.

- 4) Where stray electrical currents are encountered, piping containing liquids at marine motor fuel dispensing facilities shall be electrically insulated from the shore piping.
 - 5) A readily accessible valve to shut off the product supply from shore shall be provided in each pipeline at or near the approach to the pier and at the shore end of each marine pipeline, adjacent to the point where a flexible hose is attached.
- c) Leak Detection
- 1) All pressurized piping systems shall be equipped with line leak detectors pursuant to Section 175.640.
 - 2) After April 1, 1995, all installations shall have double-wall piping with interstitial monitoring.

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SECTION 175.465 ADDITIONAL REQUIREMENTS FOR INSTALLATION AND
UPGRADE OF USTs**

Section 175.465 Additional Requirements for Installation and Upgrade of USTs

Installation and upgrade of USTs shall be properly conducted in accordance with 41 Ill. Adm. Code 174 through 176 and manufacturer's recommended procedures and instructions. In addition, the following requirements shall be adhered to:

- a) Excavation for USTs shall be made with due care to avoid undermining of foundations of existing structures.
- b) The UST site shall be prepared to ensure safe movement and installation of equipment and materials. Sloping, benching, stepping or shoring the sides of excavations shall be performed in compliance with OSHA requirements under 29 CFR 1926.
- c) Upon delivery at the installation site, tanks and piping shall be inspected to detect any evidence of damage to coatings or structure.
- d) Upon discovery of any damage to tanks or piping, repairs shall be made in accordance with 41 Ill. Adm. Code 172, 174, 175 and 176 and manufacturer's instructions.
- e) Equipment shall be provided with sufficient lifting capacity to unload and place USTs into the tank excavation. The tank shall be placed in the excavation with care, since dropping or rolling the tank into the excavation can break a weld, puncture or damage the tank, or scrape off the protective coating of coated tanks. Tanks shall not be rolled, dropped or dragged.
- f) Steel tanks shall be set on firm foundations and surrounded with at least 12 inches of noncorrosive inert material such as clean sand or gravel, well-tamped in place.
- g) In areas subject to flooding or high groundwater, USTs shall be installed to safeguard against movement by anchoring or ballasting in accordance with manufacturer's instructions.
- h) Unless otherwise prescribed by the manufacturer's recommended installation procedures, steel tanks shall be covered with a minimum of 3 feet of earth. USTs existing on October 1, 1985 shall be buried so that the tops of the tanks will not be

less than 2 feet below the surface of the ground or shall be under at least 12 inches of earth and a slab of reinforced concrete not less than 4 inches in thickness; the slab shall be set on a firm, well-tamped earth foundation and shall extend at least one foot beyond the outline of the tank in all directions. When asphaltic or reinforced paving is used as part of the protection, it shall extend at least one foot horizontally beyond the outline of the tank in all directions.

- i) Tank to tank separation distance shall be a minimum of 24 inches for all tanks installed after May 1, 2003.
- j) There shall be a minimum of 2 manufactured slotted or perforated observation wells of at least 4" diameter installed in each new tank field of tanks larger than 1,000 gallons and one well for 1,000 gallon tanks or less and shall have 2 wells for fields with more than one tank. They shall be placed at opposite ends or opposite corners one foot below the invert elevation of the lowest UST. Lids shall be securely protected against unauthorized activities. Only one well will be required if groundwater flow direction can be proven and that proof is supplied at the time of permitting and the well is then installed in the downstream location.
- k) Metallic tanks and metallic piping shall not be backfilled with cinders or other material of corrosive effect. Corrosion protection shall be provided in accordance with Section 175.510.
- l) Any work performed in or around the excavation area must stop at sunset unless adequate lighting is provided.

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SECTION 175.500 INTERIOR LINING AND LINING INSPECTION OF USTs**

Section 175.500 Interior Lining and Lining Inspection of USTs

- a) Tank Lining Requirements. Lining of tanks shall no longer be allowed for all permit applications received on or after January 1, 2011. Existing lined tanks shall be allowed to use lining as a primary method of corrosion protection only if the tanks continue to pass the lining inspections as provided in this Section. Tanks failing to pass the lining inspection criteria will not be allowed to be touched up, repaired, totally relined or put back into use and shall be decommissioned immediately and removed within 60 days after the lining inspection.
- 1) The manufacturers of materials used to line or repair leaking tanks for the storage of petroleum or hazardous substances shall register with OSFM. The manufacturers shall provide and maintain a current annual list of installers of their particular methods and materials for lining and repairing tanks. The list shall only contain the names of installers who are certified by the respective manufacturers. This manufacturer's registration shall include the submission of evidence for materials and tank specifications indicated in NLPA Standard 631, incorporated by reference in 41 Ill. Adm. Code 174.210. The manufacturer shall also certify compatibility of the lining material with products to be stored by submitting to OSFM the following data as required by Section A4.6 of NLPA 631.
 - A) Laboratory Data:
 - i) Bonded Linings: When applied to properly prepared steel, concrete, fiberglass and other tank surfaces, bonded linings shall maintain a minimum useful life of 10 years.
 - ii) Coefficient of Thermal Expansion: The coefficient of thermal expansion of the lining shall not result in loss of bonding due to normal operating temperature changes.
 - iii) Immersion Tests: Representative lining samples shall be tested to determine compatibility of the lining material with stored products. Samples shall be immersed in the liquids listed below at either 38°C (100°F) for periods of one, 3, 6 and 12 months. Upon completion of each immersion period, testing of the samples must verify that the lining and repair

materials have not substantially deteriorated.

- B) Test Data: The following tests, standards and equipment shall be conducted as indicated in Section A4.6 of NLP 631 for the following:
- i) Bonding Strength, using Elecometer 106 with rating of 0-2000 lbs. per sq. inch
 - ii) Flexural Strength
 - iii) Impact Resistance
 - iv) Barcol Hardness, using Barber Coleman GYZJ 935-1
 - v) Film Integrity Procedure 1
- C) Lining sample testing shall require lining samples to be immersed for the required timeframes specified in Section A4.6 of NLP 631, in each of the following liquids: Unleaded Gasoline, Leaded Gasoline, ASTM Reference Fuel C, No. 2 Fuel Oil or Diesel Fuel, Toluene, Xylene, Gasohol (10% Ethanol), Oxinol-50 (90% gasoline, 5% methanol and 5% GTBA) 85% methanol, 15% gasoline and distilled water. Physical properties, after the final immersion period, shall be a minimum of 30% of the original physical properties before immersion with a stable trend indicating little or no further long-term deterioration for Toluene, Xylene and distilled water, and 50% for all other listed material.
- 2) Interior Lining Procedures. For all permit applications received prior to January 1, 2011, any tank that has not previously been internally lined may be lined only once by following the steps outlined in this Section.
- A) Tank Entry. Before entering tanks, the procedures described in API 2015, incorporated by reference in 41 Ill. Adm. Code 174.210, shall be complied with. These requirements include checking the oxygen content inside the tank with a properly calibrated oxygen monitor. At all times, personnel entering the tank shall be equipped with positive pressure air supplied equipment with full face enclosure and safety harness connected to a safety line held by an attendant located outside the tank and using a tripod with a mechanical winch adequate to lift the person and equipment working inside the tank. Oil and water resistant rubber or neoprene boots and gloves shall be worn. Clothing shall cover the arms, legs, torso and head of tank entry personnel. Disposable clothing, impervious to product, is preferred. Clothing saturated with product shall be removed immediately upon departure from the tank. Tests with the combustible gas indicator and oxygen monitor shall be performed periodically in the tank to ascertain that the tank vapors and oxygen content are in the safe range. It shall be recognized that if the tank is perforated, product or vapors that have leaked into the soil may re-enter the tank through a perforation. The vent line shall remain clear and unobstructed to allow continuous ventilation. All other lines and openings shall be plugged or capped off to insure no liquids or

vapors may enter the tank during the lining operation.

B) **Structural Criteria.** Prior to the application of lining, a structural criteria inspection shall be performed and the results of that inspection documented, as to whether the tank or tanks to be lined meet each of the structural criteria to be eligible to be lined pursuant to NLPA 631, and this subsection (a)(2)(B). The records from the structural criteria inspection shall be retained by the owner/operator for the life of the tank. Lining of tanks shall not be allowed if:

- i) The shell or heads are more than 2% out of round;
- ii) The shell or heads have one or more flat spots that have a cross measurement greater than the radius of the tank endcap;
- iii) The shell or heads have any dent with a cross measurement greater than the radius of the tank endcap;
- iv) The shell or heads have any dent that protrudes into the tank a distance greater than one inch for every foot of tank radius;
- v) The shell or head has any seam split greater than $\frac{1}{2}$ inch wide or $\frac{1}{6}$ of the circumference of the tank in length;
- vi) The unrepaired shell or head thickness is less than 75% of the original tank thickness;
- vii) The number of perforations, not larger than $\frac{1}{2}$ inch, per 500 square feet of tank exceeds the limits in Table A10.4.2.4 of NLPA 631; or
- viii) There are any welded repairs on the inside of the tank.

C) **Application of Lining.** Prior to the application of lining material, a $\frac{1}{4}$ inch steel reinforcing plate rolled to the contour of the tank and with minimum dimensions of 8 inches by 8 inches shall be installed under the fill (drop) tube and gauging tube. This plate shall be covered with fiberglass cloth embedded in resin. The blast-cleaned surface shall be coated within 8 hours after blasting and before any visible rusting occurs. Only those lining materials meeting the specifications in API 1631 and NLPA 631 shall be used.

Manufacturer's instructions are to be complied with on handling and mixing of resin compounds, and these compounds shall be applied to the entire interior surface of the tank by the manufacturer or the manufacturer's designated distributor following the specified method of application, to the designated thickness and at the recommended application temperature. If a heater is used to accelerate the curing process, all other work which might release flammable vapors shall be halted, and the heating unit shall be attended whenever it is in operation. The coating shall be cured thoroughly to the manufacturer's specifications and checked for air pockets and pinholes using a holiday detector. If any exceptions are found, they

shall be repaired to manufacturer's specifications. The contractor shall protect the coated surfaces from contamination by foreign matter. The coating thickness shall be checked with an Elcometer Thickness Gauge or equivalent and tested for hardness using a Barcol Hardness Tester or equivalent to ensure compliance with manufacturer's specifications.

- D) Tank Closing. If a tank has been previously lined and passes its internal inspection, the following may be done in lieu of the manway requirements of subsection (a)(2)(E) of this Section:
- i) A ¼ inch thick steel cover plate, rolled to the contour of the tank, shall be made to overlap the hole at least 2 inches on each side (e.g., should measure at least 26 inches by 26 inches, if manhole was cut 22 inches by 22 inches);
 - ii) The cover shall be used as a template to locate ¾ inch diameter holes not exceeding 5 inch centers, one inch from the edge of the cover;
 - iii) The cover plate shall be sandblasted to white metal on both sides, and the entire inside surface shall be coated with coating material to act as a gasket;
 - iv) After being bolted to the tank, the cover plate and surrounding tank surface shall be properly sandblasted, coated with coating material and allowed to cure before backfilling the hole;
- E) Tank Closing after Entry Procedures. When a tank is being lined the following shall apply:
- i) Attach a manway no less than 18 inches in diameter that fits the contour of the tank. This manway shall be surrounded with self-supporting material and be accessible from surface grade.
 - ii) The manway shall be used as a template around which will be located ¾ inch diameter holes, 5 inches apart from center to center, one inch from the edge, and overlapping the entry hole at least 2 inches on each side, or welded in place if soil conditions will allow (no contamination is present). The lining material shall extend into the neck of the manway.
- F) Tank Lining Shall Conform to NLPA Standard 631. Original field notes documenting that the pre-lining inspection and tank lining application process complied with the requirements of NLPA Standard 631 shall be kept by the owner/operator for the life of the tank. Completion of the forms provided by OSFM for tank linings at www.state.il.gov/OSFM/PetroChemSaf/LiningForms.htm shall be considered as equivalent to the forms required under NLPA Standard 631.
- G) Within 5 years after lining, and every 5 years thereafter, the lined

tank shall be internally inspected and found to be structurally sound with the lining still performing in accordance with original design specifications. An interior lining inspection permit under Section 175.300 must be obtained to do an internal inspection. The results and data from the lining inspection, including whether the tank passed or failed, shall be submitted to OSFM within 10 days after the lining inspection.

- 3) Internal Lining Combined with Cathodic Protection.
 - A) For all applications received prior to January 1, 2011, a tank may be upgraded by both internal lining and cathodic protection if:
 - i) The lining is installed in accordance with the requirements of subsection (a)(2) above and Section 175.700; and
 - ii) The cathodic protection system meets the requirements of Section 175.400(b)(2)(B) through (C) and 175.510.
 - B) An interior inspection for an installation of internal lining combined with cathodic protection is required only once, provided the installation of both was completed within 90 days of each other and a structural criteria inspection was performed and documented.
- b) Within 5 years after initial lining or total subsequent lining of a tank, a physical internal inspection shall be performed as follows:
 - 1) The procedures for tank lining in subsection (a) shall be followed while entry is made into an existing UST for internal inspection purposes.
 - 2) Once a UST has been entered, a visual inspection of the lining shall be made. The lining shall be visually inspected for obvious evidence of peeling, blistering, surface wrinkling or roughing of the lining material. No repairs of any kind to existing linings will be allowed.
 - A) Testing shall be done to check the thickness of the shell and heads of the tank. The average metal thickness shall be at least 75% of the original tank metal thickness. Ultrasonic testing shall be done in accordance with Chapter B7 of NLPA Standard 631.
 - i) Tanks not meeting the wall thickness requirements shall be condemned and not put back into service as referenced in Section B8.1 of NLPA 631.
 - ii) No welding or cutting will be allowed inside the tank.
 - B) After a lined tank passes both the visual and the tank wall thickness test, it must be tested for holidays (air pockets) in the lining material. This test shall be performed using a holiday detector with a silicon brush electrode or other acceptable instrument to ensure the integrity of the lining material. The internal inspection holiday test shall be conducted at a rate of at least 100 volts per mil of nominal lining thickness, but in no case less than 12,500 volts or more than 35,000 volts. Tanks needing repairs shall be condemned and not put back

into service.

- C) If all previous testing ensures the integrity of the lining, it shall then be tested for hardness. Lining hardness test shall be performed using a Barcol Hardness Tester or another acceptable instrument to determine that the lining was properly cured when installed or that it has not been affected by the product stored. The overall hardness must meet the lining manufacturer's specifications for the product stored. In the event that some areas pass the hardness test and other areas fail the hardness test, the tank shall be condemned and not put back into service.
 - D) The final test to verify that an existing lining still meets the manufacturer's original specifications shall determine the thickness of the coating. The entire interior tank lining wall surface shall be no less than 100 mils thick with a nominal (i.e., approximate) thickness of 125 mils. If any areas of the existing coating do not meet the 100 mils minimum thickness requirement, the tank shall be condemned and not put back into service.
 - E) Where applicable, interior inspections of lined fiberglass tanks shall be the same as lined steel tanks, except testing will not be required for tank thickness and for holidays in the lining material.
- 3) During the Operational Safety Inspection, the contractor will not be allowed to either cut a new access hole into the tank, nor break open an existing entrance patch until all the required testing equipment is on site. Also, a complete set of OSFM reporting forms found at www.state.il/OSFM/PetroChemSaf/LiningForms.htm must also be onsite before the entering process may begin.
 - 4) The entrance manhole, hole or patch opening shall be closed and sealed. When a bolted manway is to be installed as a new access opening for future access use, an upgrade permit will be required to make this type of improvement to the tank. No upgrade permit will be required if a manway is installed in conjunction with a lining permit or lining inspection permit, with manholes bolted to the tank top only in conjunction with an inspection, so as not to damage the existing lining.
 - 5) Written documentation generated from the lining of a tank, consisting of completed OSFM forms for tank linings found at www.state.il/OSFM/PetroChemSaf/LiningForms.htm, shall be submitted to OSFM no later than 10 days after the lining procedure completion.
 - 6) Every 5 years after the initial 5 year internal inspection, the tank must be reinspected. This can be done by a physical inspection or by another method approved by OSFM. The results and data from the lining inspection, including whether the tank passed or failed, shall be submitted to OSFM within 10 days after the lining inspection.
 - 7) All interior inspections require an Internal Inspection Permit.
- c) UST lining and internal inspections shall meet the following OSFM requirements:

- 1) Secure proper permitting and obtain OSI schedule.
- 2) Contractor shall present to OSFM inspector the OSHA Confined Space Entry permit for this job at the time of tank entry.
- 3) All monitoring equipment shall be maintained according to manufacturer's specifications.
- 4) Establish an exclusion zone, approved by the on-site STSS, within which any ignition source shall be prohibited. The use of spark producing/non-explosion proof equipment is prohibited in the vapor hazard area prior to attaining the LEL/oxygen levels required in subsection (c)(7).
- 5) USTs to be entered shall be isolated from all distribution lines, siphons, manifolds and manifold vent systems.
- 6) Remove all liquids from the tank using explosion proof pumps or hand pumps.
- 7) The tank atmosphere and the excavation area shall be regularly monitored, with a combustible gas indicator, for flammable or combustible vapor concentration. Monitoring of the UST shall be done at 3 levels in the tank: top, middle and bottom. Lower explosive limits (LEL) of 5% or less, or oxygen of 5% or less, shall be attained.
- 8) Except as otherwise provided in this Section, vapor freeing shall be done in accordance with API 1631 Section 2.4, incorporated by reference in 41 Ill. Adm. Code 174.210. Dry ice shall not be allowed as a method of inserting tanks. All inductors and diffusers must use metallic pipe. When vapor freeing the tank with compressed air or using inert gases under pressure, all devices shall be bonded to the tank, and the tank shall be grounded to a separated ground. Except when using liquid nitrogen, when using inert gases, the cylinder shall be equipped with a pressure gauge, so that no more than 5 psi can be discharged into the tank during vapor freeing procedures. To ensure and maintain proper grounding and bonding, the connections shall be tested by the contractor for continuity. This testing shall be done with equipment designed for continuity testing.
- 9) The STSS shall be on site before venting, cutting, cleaning or entry operations may proceed.
- 10) If no access exists, an opening with the minimum dimensions of 18 inches by 18 inches shall be cut in the top of the UST using non-sparking equipment in preparation for a manway. All installed manways must be accessible from surface grade by way of a non-collapsible structure.
- 11) Personal protective equipment shall be in accordance with API 1631.
- 12) Cutting, cleaning and application of lining material shall be done in accordance with manufacturer's specifications and OSFM requirements.
- 13) Tank owner shall file an amended Notification on OSFM forms found at www.state.il.gov/OSFM/PetroChemSaf/Notify.pdf with OSFM within 30 days after the tank has been lined.

- 14) For performing internal inspections, once a tank has been reclassified as a non-hazardous confined space, a positive flow of fresh air must be supplied into the tank in lieu of supplied air and continuous monitoring must be performed during the operation
- d) The following testing and records requirements shall apply to all tank lining and lining inspections activity:
- 1) It shall be the responsibility of the lining contractor to have a precision test performed within 3 days after the lining or lining inspection procedure completion and before the tank is put back into use and to submit the results to OSFM within 10 days after, or within 3 days after a failed test, on forms provided by OSFM at www.state.il/OSFM/PetroChemSaf/LiningStatementPrecisionTightnessTest.pdf and at www.state.il/OSFM/PetroChemSaf/FailedUST.pdf. This precision test shall be performed any time a UST is entered to install a manway, install a cover plate after lining, do an internal inspection of the tank, or penetrate the tank for any lining or lining inspections purpose.
 - 2) Tank owner shall file an amended notification on OSFM forms found at www.state.il/OSFM/PetroChemSaf/Notify.pdf with OSFM within 30 days after the tank has been lined.
 - 3) Lining inspections records shall be maintained for the life of the UST, and the most recent inspection record shall be kept on site pursuant to Section 175.650(e). The results and data from the lining inspection, including whether the tank passed or failed, shall be submitted to OSFM within 10 days after all lining inspections.

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SECTION 175.510 CORROSION PROTECTION**

Section 175.510 Corrosion Protection

In all situations, no matter which method is used to assess the integrity of the tank prior to addition of cathodic protection, the cathodic protection system being field installed in Illinois must be designed by a corrosion expert who is NACE certified in cathodic protection design or by a Licensed Professional Engineer with the state who has certification or licensing that includes education and experience in corrosion control of buried or submerged metal piping systems and metal tanks. Those contractors installing the cathodic protection systems in Illinois must be licensed as cathodic protection installers. These contractors must successfully pass the International Code Council (ICC) certification exam module for cathodic protection. An installation/retrofitting ICC certified contractor may install wristband anodes or spike anodes on a flex connector without having a cathodic protection ICC certification. |

- a) Cathodic Protection. A tank may be upgraded by cathodic protection if the cathodic protection system meets the requirements of 41 Ill. Adm. Code 174 through 176, and the integrity of the tank is ensured using one of the following methods:
 - 1) To be suitable for upgrading by cathodic protection, the integrity of the tank must be ensured by one of the following methods:
 - A) For tanks installed for less than 10 years, the following requirements apply:
 - i) The tank is internally inspected and assessed to ensure that the tank is structurally sound and free of corrosion holes prior to installing the cathodic protection system;
 - ii) The tank is monitored monthly for releases using a permanent method of leak detection as approved by OSFM. Monthly inventory control, manual tank gauging and Statistical Inventory Reconciliation (SIR) do not meet this requirement;
 - iii) Two tank precision tests must be conducted that meet the requirements of OSFM precision tank tightness testing. The first precision test shall be conducted prior to the installation of the cathodic protection system. The second precision test shall be conducted between 3 and 6 months following the

first operation of the installed cathodic protection system.
Both tests must indicate tightness of the tanks;

- iv) Use of alternative methods approved by OSFM. These acceptable alternative methods are indicated in subsection (a) (1)(B) for tanks that are over 10 years old.
- B) For tanks installed for more than 10 years, the following methods apply:
- i) An invasive inspection method that ensures the tank is internally inspected and assessed to ensure that the tank is structurally sound and free of corrosion holes prior to installing the cathodic system. The internal inspection procedures shall follow the requirements of NLPA 631.
 - ii) An invasive remote video camera test is conducted prior to the installation of the cathodic protection system. The video system must be capable of recording a video survey of the interior surface of the tank with a suitable lighting source.
 - iii) A non-invasive tank life/corrosion model test is conducted to examine the soil environment in the immediate vicinity of the tank and the relationship of the metal UST to this environment. A statistical model is used to assess the relationship between the aggressiveness of the environment and the rate of corrosion and to predict the remaining life of the UST prior to corrosion failure. An example of a noninvasive test method is Mean Time to Corrosion Failure (MTCF).
 - iv) The tanks are assessed for corrosion holes by other methods determined by OSFM, to prevent releases in a manner that is no less protective of human health and the environment than subsections (a)(1)(B)(i), (ii) and (iii).
- 2) OSFM requires a tank integrity assessment even if both cathodic protection and interior lining systems are being installed. If the cathodic protection and interior lining are installed at the same time, only one approved integrity assessment is required. Even if both systems have been installed, OSFM requires routine inspection and maintenance of both systems to continue.
- 3) If one of the non-invasive methods described in this Section has been used to assess tank integrity of a tank older than 10 years, the leak detection method used on these tanks after installing the cathodic protection system may not be the monthly inventory control method, SIR, or manual tank gauging method of leak detection. Acceptable leak detection methods that can be used are as follows: automatic tank gauging, vapor monitoring, groundwater monitoring, interstitial monitoring, fiber optics or tracer elements.
- 4) USTs equipped with both interior lining and cathodic protection (sacrificial anodes or impressed current).

- A) The following maintenance procedures shall apply:
 - i) Sacrificial anodes must be tested according to the requirements of subsection (f).
 - ii) Impressed current records of operation must be recorded every 30 days and records kept on site for 2 years. The system must be tested annually and records kept on site for 3 years.
 - iii) As of September 1, 2010, some facilities may exist that had been previously granted an OSFM waiver for the UST lining maintenance requirements based upon original field notes from the initial lining, of an invasive method of initial tank integrity assessment verifying that there were no holes in the tank. For these systems, only the external cathodic protection system must be maintained and tested.
- B) For those USTs where a non-invasive tank integrity assessment method was used or if there were any holes present in the tank, regular interior lining inspections must continue as described in Section 175.500.
- b) ACT-100 Tanks Installed with Sacrificial Anodes. Owners of ACT-100 tanks meeting STI F894.01, incorporated by reference in 41 Ill. Adm. Code 174.210, and able to produce ACT-100 warranty papers may choose the steel-FRP composite design as a sole method of corrosion protection instead of maintaining the sacrificial anodes.
- c) Upgrades to Combine Internal Lining with Cathodic Protection. For all permit applications received prior to January 1, 2011, a tank may be upgraded by both internal lining and cathodic protection if:
 - 1) The lining is installed in accordance with the requirements of Section 175.500; and
 - 2) The cathodic protection system meets the requirements of Section 175.400(b)(2)(B) and 175.510.
- d) Piping Corrosion Protection Requirements. All UST metal product piping that is in contact with backfill, ground or water shall be cathodically protected. All metal risers, vents and fills in contact with backfill, ground or water shall be dielectrically coated. Shrink-wrap or boots are not acceptable as a form of cathodic protection in a water environment.
- e) Wiring of all associated electrical equipment shall conform to the requirements of Section 175.425 and shall also conform to the following requirements:
 - 1) All wiring that is connected to any anode of an impressed current system shall be no less than No. 10 stranded, with jacketing that is suitable for direct burial and that is petroleum or hazard resistant for the product conveyed. Such jacketing is to have a thickness sufficient to cause the wiring to have a diameter of at least $\frac{5}{16}$ inch. Systems existing prior to

May 1, 2003 may remain.

- 2) All wiring connected to any anode of a sacrificial anode system shall be suitable for direct burial and shall be resistant to petroleum and/or hazardous substances.
- 3) All structural lead wiring of any cathodic protection system shall be suitable for direct burial and shall be petroleum and/or hazard resistant.
- 4) For installation of cathodic protection systems to facilities existing prior to May 1, 2003, anode wiring may be placed into pavement saw-cuts, provided that the following conditions are met:
 - A) No part of the wiring is less than one inch below the finished pavement surface, and provided that the portion of the saw-cut groove above the wiring is filled with a combination of at least $\frac{3}{8}$ inch of backerod and at least $\frac{1}{2}$ inch of self-leveling caulk suitable as a concrete filler.
 - B) Structure lead wiring of impressed current systems shall consist of at least 2 separate leads. Such leads running from the junction box or rectifier to the UST structures must be in separate saw-cuts, jumpering from one UST structure to the next. One lead shall connect to the first structure to be protected and continue on to all structures in the UST. The second lead will connect to the last structure to be protected. Such loop is to ensure that if one lead were to become cut or disconnected, the other lead would ensure the continued connection of the UST structures and the junction box or rectifier.
 - C) All wiring from anodes shall terminate and be identified (as to location per approved site plan), in strategically located junction boxes, placed in and around the protected field. This will facilitate the testing of each anode.
- 5) Beginning May 1, 2003 for installation of cathodic protection systems, all wiring running outside of manholes or sumps shall be located at least 12 inches below the finished grade and installed in conduit approved for petroleum and/or hazardous installations.
- f) Operation and Maintenance of Cathodic Protection. Owners or operators of steel USTs with corrosion protection shall comply with the following requirements to ensure that releases due to corrosion are prevented for as long as the UST is used to store regulated substances:
 - 1) All corrosion protection systems shall be operated and maintained to continuously provide corrosion protection to the metal components of that portion of the tank and piping that routinely contain regulated substances and are in contact with the ground, backfill or water. STI-P3 tanks are to be tested every 3 years for proper corrosion protection operation.
 - 2) All USTs equipped with sacrificial anode or impressed current cathodic protection systems shall be tested and inspected for proper operation, when being put into operation, by a contractor that has successfully passed the

International Code Council (ICC) certification exam module for cathodic protection. Such testing shall be in accordance with the following requirements:

- A) Frequency. All cathodic protection systems shall be re-tested no less than 24 weeks and no more than 28 weeks from the date of installation or repairs. All sacrificial anode systems shall be tested every 3 years by a tester that meets the qualifications of this subsection (f)(2). In the event that a reading of -875 millivolts or less is recorded with testing being conducted above the structure, on any type of corrosion protection system, then annual testing will be required thereafter. In the event that upgrading of the cathodic protection system results with readings greater than -875 millivolts with readings being conducted above the structure, then testing may be conducted every 3 years, unless the 6 month test after upgrading produces a reading of -875 millivolts or less, then annual testing will be required.

- B) Inspection Criteria. The criteria that are used to determine that cathodic protection is adequate as required by this subsection (f)(2) (B) shall be in accordance with NACE RP0285 and SP0169, incorporated by reference in 41 Ill. Adm. Code 174.210. Subject to the technical applicability of these criteria given actual site conditions, one or more of the following criteria shall apply for adequacy of cathodic protection. Cathodic protection shall be repaired or replaced if it fails to meet the standards provided in this subsection (f)(2)(B).
 - i) A negative (cathodic) potential of at least 850 millivolts with cathodic protection applied. This potential is measured with respect to a saturated copper/copper sulfate reference electrode contacting the electrolyte.

 - ii) A minimum 100 millivolt of cathodic polarization between the structure and a saturated copper/copper sulfate reference electrode contacting the electrolyte. Such polarization shall be determined from the taking of a valid "instant-off" test, that, for each testing point, determines the voltage reading at the second drop in voltage following the interruption in cathodic protection being applied, and determines if the voltage reading is at least 100 millivolts higher than either the native reading or any other reading after the structure has had time to depolarize with no cathodic protection applied.

- 3) USTs with impressed current cathodic protection systems shall also be tested and inspected, prior to being put into operation and every 30 days thereafter, to ensure the equipment is running properly and the entire system must be tested annually by a cathodic protection tester certified under the requirements of 41 Ill. Adm. Code 172.

- 4) For USTs using cathodic protection, records of the operation of the cathodic protection shall be maintained to demonstrate compliance with the performance standards in this Section. These records shall provide the following:

- A) The results of testing for sacrificial anode systems, the 6-month test and annual tests must be maintained on site for 2 years;
 - B) All records from the last 2 cathodic protection total system tests by a qualified cathodic protection tester pursuant to a 3-year cycle must be maintained on site; and
 - C) Impressed current systems must be inspected every 30 days and reports or a log maintained that shows date of inspection, initials of inspector, hour, volt and amp readings, and power on verification. A minimum of 2 years of records shall be kept on site. Also, a certified corrosion protection contractor must check the total system annually after the date of installation and results shall be kept on site for 2 years.
- 5) Alternative methods of corrosion protection may be used if approved in writing by OSFM, provided they are no less protective of human health or the environment.

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OTHER REGULATED SUBSTANCES**

**SECTION 175.600 OWNER/OPERATOR SPILL AND OVERFILL RELEASE CONTROL
RESPONSIBILITIES**

Section 175.600 Owner/Operator Spill and Overfill Release Control Responsibilities

- a) Owners or operators shall ensure that releases due to spilling or overfilling do not occur. The owners or operators shall ensure that the volume available in the tank is greater than the volume of product to be transferred to the tank before the transfer is made and that the transfer operation is monitored constantly to prevent overfilling and spilling.
- b) Owners or operators shall report, investigate and clean up any spills and overfills in accordance with 41 Ill. Adm. Code 176.300 through 176.350.

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SECTION 175.610 GENERAL RELEASE DETECTION REQUIREMENTS FOR ALL
USTS

Section 175.610 General Release Detection Requirements for All USTs

- a) Owners or operators of new and existing USTs shall provide a method, or combination of methods, of release detection that:
 - 1) Can detect a release from the entire tank and any portion of the connected underground piping that routinely contains product;
 - 2) Is installed, calibrated, operated and maintained in accordance with the manufacturer's instructions, including routine maintenance and service checks for operability or running condition; and
 - 3) Meets the performance requirements in Sections 175.630 and 175.640. All performance claims and the manner of determining the claims shall be described in writing by the equipment manufacturer or installer. In addition, methods used on or after December 22, 1990 (except for methods permanently installed prior to that date) shall be capable of detecting the leak rate or quantity specified for that method in Section 175.630 and 175.640 with a probability of detection of 0.95 and a probability of false alarm of 0.05. Release detection for tanks and piping permitted on or after February 1, 2008 must also meet the interstitial monitoring requirements indicated in Sections 175.400 and 175.420.
- b) All leak detection equipment must be evaluated and be listed in the NWGLDE publication "List of Leak Detection Evaluations for Storage Tank Systems", as referenced in 41 Ill. Adm. Code 174.210, or, may be utilized if approved by OSFM.
- c) When a release detection method operated in accordance with the performance standards in Sections 175.630 and 175.640 indicates a release may have occurred, owners or operators shall notify the Illinois Emergency Management Agency in accordance with 41 Ill. Adm. Code 176.300 through 176.330.
- d) All leak detection equipment installed on a UST, whether required or not, shall be maintained. Self-diagnosing release detection systems may not be used to circumvent any testing required by 41 Ill. Adm. Code 174, 175, 176 or 177.

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SECTION 175.620 RELEASE DETECTION REQUIREMENTS FOR HAZARDOUS
SUBSTANCE USTs**

Section 175.620 Release Detection Requirements for Hazardous Substance USTs

- a) Owners or operators of hazardous substance USTs, permitted prior to February 1, 2008, shall provide release detection that complies with Section 175.610 and 40 CFR 280.42, and shall be designed, constructed and installed to contain regulated substances released from the tank system until they are detected and removed, prevent the release of regulated substances to the environment at any time during the operational life of the UST, and be checked at least every 30 days for evidence of a release. Underground piping shall be equipped with secondary containment as allowed under subsections (a) and (b) and, if under pressure, be equipped with both an automatic line leak detector and interstitial monitoring meeting the requirements of Sections 175.640(a) and 175.630(g) and 40 CFR 280.
- b) The following existing systems installed before February 1, 2008 are allowed:
 - 1) Secondary containment systems with interstitial monitoring capable of detecting a failure from the inner and outer wall.
 - 2) Double-wall tanks which are able to detect the failure of the inner or outer wall.
 - 3) External liners (including vaults) that meet the requirements of 40 CFR 280.42.
 - 4) Other methods of release detection may be used if owners or operators:
 - A) Demonstrate to OSFM that an alternate method can detect a release of the stored substance as effectively as the method allowed in Section 175.630(g); written approval is required from OSFM to use the alternate release detection method before it can be used; and
 - B) Provide written information to OSFM on effective corrective action technologies, health risks and chemical and physical properties of the stored substance, and the characteristics of the UST site.
- c) Hazardous substance USTs permitted on or after February 1, 2008 shall be double-wall and shall have interstitial monitoring in compliance with Section 175.630(g).

All pressurized piping shall have automatic line leak detectors. Hazardous substance USTs shall not be permitted unless all UST components are listed by a nationally recognized independent third party organization as compatible with the product being stored.

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SECTION 175.630 METHODS OF AND REQUIREMENTS FOR RELEASE DETECTION FOR TANKS

Section 175.630 Methods of and Requirements for Release Detection for Tanks

Owners and operators of petroleum USTs shall provide release detection on tanks. Only one approved method of primary release detection is required for each tank although multiple methods are acceptable. If present, secondary release detection systems must be maintained. No method of release detection shall be used unless that method has been approved by OSFM. USTs must be monitored at least every 30 days for releases using one or more of the methods listed below:

- a) Monthly Inventory Control
 - 1) Product inventory control (or another test of equivalent performance) shall be conducted monthly to detect a release of at least 1.0 percent of the flow through plus 130 gallons on a monthly basis in the following manner:
 - A) Inventory volume measurements for regulated substance inputs, withdrawals and the amount still remaining in the tank are recorded each operating day;
 - B) The equipment used is capable of measuring the level of product over the full range of the tank's height to the nearest $\frac{1}{8}$ inch;
 - C) The regulated substance inputs are reconciled with delivery receipts by measurement of the tank inventory volume before and after delivery;
 - D) Deliveries are made through a drop tube that extends to within 6 inches of the tank bottom;
 - E) Product dispensing is metered and recorded pursuant to Section 8 of the Weights and Measures Act [225 ILCS 470/8];
 - F) The measurement of any water level in the bottom of the tank is made to the nearest $\frac{1}{8}$ inch at least once a month;
 - G) All personnel involved in performing inventory control measurements, recordkeeping and related performance must be knowledgeable in that performance and activities;

- H) Monthly inventory control records for the previous 2 years must be kept on site or available within 30 minutes or before OSFM completes its inspection, whichever is later;
 - I) This method can only be used for a period of 10 years after the date cathodic protection was first installed on the tank. A precision tank test must be performed at 5 years and 10 years and these records kept on site for 10 years. At the 10-year point, another form of leak detection is required;
 - J) No USTs installed after May 1, 2003 will be allowed to use this method.
 - K) Inventory control may not be used on systems with blending pumps or siphon tanks.
- 2) Monthly inventory control cannot be used as a method of release detection for any tank that, after passing only a noninvasive tank integrity assessment, was upgraded using the cathodic protection method.

b) Manual Tank Gauging

- 1) Only tanks of 600 gallons or less nominal capacity may use the method described in this subsection as the sole method of release detection. Tanks over 2,000 gallons may not use this method of release detection. All owners or operators using manual tank gauging methods must conduct a monthly reconciliation and maintain those reconciliation records. The requirements for this type of release detection shall adhere to requirements listed in this subsection for the specific tank sizes noted:

Requirements

Nominal tank capacity	Whether use of manual tank gauging for release detection is allowed	Time limit on use of manual tank gauging for release detection
600 gallons or less	Allowed as sole method of release detection	Allowed indefinitely
601-2,000 gallons	Only in combination with annual tank precision testing	Only for the first 10 years after the date cathodic protection was first installed
Over 2,000 gallons	Not allowed even in combination with annual tank precision testing	Never allowed

2) Standards

- A) In order to be eligible to continue to use manual tank gauging alone (tanks 600 gallons or less only) or in combination with other methods (tanks up to 2,000 gallons only), the following standards regarding

maximum variation between beginning and ending product level measurements shall be adhered to:

Standards

Nominal tank capacity	Weekly standard (one test)	Monthly standard (average of 4 tests taken once weekly over a 4-week period)
600 gallons or less	10 gallons	5 gallons
601-1,000 gallons	13 gallons	7 gallons
1,001-2,000 gallons	26 gallons	13 gallons

- B) A leak is suspected and subject to the requirements of 41 Ill. Adm. Code 176.300 through 176.360 if the variation between beginning and ending measurements exceeds the weekly or monthly standards as listed in this subsection (b). Weekly inventory records, monthly reconciliation records, annual tightness test results, and related records shall be maintained for 2 years in order to continue to be eligible to continue to use manual tank gauging.
- 3) Manual tank gauging shall also meet the following requirements:
- A) Tank liquid level measurements are taken at the beginning and ending of a period of at least 36 hours during which no liquid is added to or removed from the tank;
- B) Level measurements are based on an average of 2 consecutive stick readings at both the beginning and ending of the period;
- C) The equipment used is capable of measuring the level of product over the full range of the tank's height to the nearest $\frac{1}{8}$ inch;
- D) The measurement of any water level in the bottom of the tank is made to the nearest $\frac{1}{8}$ inch at least once a month; and
- E) All personnel involved in performing manual tank gauging measurements, recordkeeping and related performance must be knowledgeable in that performance and activities.
- 4) Manual tank gauging cannot be used as a method of release detection for any tank that, after passing only a noninvasive tank integrity assessment, was upgraded using the cathodic protection method.
- 5) This method will not be allowed for tanks 601 to 2,000 gallons after May 1, 2003, except that, for those tanks for which this method was being used on May 1, 2003, the method may be used until the 10-year allowance expires.
- c) In conjunction with monthly inventory control or manual tank gauging, precision tank tightness testing, as approved by OSFM (not a stand-alone method of release detection).

- 1) Tank tightness testing (or another test of equivalent performance) shall be capable of detecting a 0.1 gallon per hour leak rate from any portion of the tank that routinely contains product while accounting for the effects of thermal expansion or contraction of the product, vapor pockets, tank deformation, evaporation or condensation, and the location of the water table. There are 4 types of precision testing:
 - A) 100 percent volumetric overfill;
 - B) Volumetric underfill with an approved ullage test of negative pressure or inert gas as approved by OSFM;
 - C) A negative pressure; or
 - D) Other approved methods, in accordance with subsection (i).
 - 2) In the case of a suspected release, tracer elements and automatic tank gauging (ATG) are not an approved method of precision tank testing.
- d) Automatic Tank Gauging (use of an ATG). ATG equipment that tests for the loss of product and conducts inventory control shall meet the following requirements:
- 1) The automatic product level monitor test can detect a 0.2 gallon per hour leak rate from any portion of the tank that routinely contains product;
 - 2) The ATG must be installed, calibrated and in compliance with the protocol of the third party evaluation;
 - 3) Beginning May 1, 2003, all new or replacement ATG monitors shall be mounted no more than 6 feet from the floor and must remain unobstructed and accessible;
 - 4) All ATG systems must be equipped with printers. If a system has to be retrofitted, a permit will be required. Systems with remote printers will be accepted.
- e) Vapor Monitoring. Testing or monitoring for vapors within the soil gas of the excavation zone shall meet the following requirements:
- 1) The materials used as a backfill are sufficiently porous (e.g., gravel, sand or crushed rock) to readily allow diffusion of vapor from releases into the excavation area;
 - 2) The stored regulated substance or a tracer compound placed in the tank system is sufficiently volatile (e.g., gasoline) to result in a vapor level that is detectable by the monitoring devices located in the excavation zone in the event of a release from the tank;
 - 3) The measurement of vapors by the monitoring device is not rendered inoperative by groundwater, rainfall, soil moisture or other known interferences so that a release could go undetected for more than 30 days;
 - 4) The level of background contamination in the excavation zone will not

interfere with the method used to detect releases from the tank;

- 5) The vapor monitors are designed and operated to detect any significant increase in concentration above the background of the regulated substance stored in the tank system, a component or components of that substance, or a tracer compound placed in the tank system; vapor monitor sensors must be permanently installed in the vapor monitor wells; a monthly inspection of the vapor monitoring system must be made and a log maintained showing the date of inspection, results and initials of the party doing the inspection; all vapor sensors must be tested for functionality by a licensed contractor at least once every 3 years and the records kept until the next test;
 - 6) In the UST excavation zone, the site is assessed to ensure compliance with the requirements in subsections (e)(1) through (4) and to establish the number and positioning of monitoring wells that will detect releases within the excavation zone from any portion of the tank that routinely contains product;
 - 7) Monitoring wells are clearly marked and secured to avoid unauthorized access and tampering;
 - 8) Vapor monitoring wells shall be of sufficient design to allow vapors to be detected from any portion of the tank being monitored and shall be a minimum of 4 inches in diameter or as approved by OSFM on the applicable permit; and
 - 9) An adequate number of vapor monitoring wells shall be provided to ensure that a release can be detected from any portion of the tank. Adequacy of the wells is subject to approval of OSFM on the applicable permit.
- f) Groundwater Monitoring. Testing or monitoring for liquids on the groundwater shall meet the following requirements:
- 1) The regulated substance stored is immiscible in water and has a specific gravity of less than one;
 - 2) Groundwater is never more than 20 feet from the ground surface, the hydraulic conductivity of the soil between the UST and the monitoring wells or devices is not less than 0.01 cm/sec (e.g., the soil should consist of gravels, coarse to medium sands, coarse silts or other permeable materials), and groundwater shall be present in the groundwater monitoring wells at all times;
 - 3) The slotted or perforated portion of the monitoring well casing shall be designed to prevent migration of natural soils or filter pack into the well and to allow entry of regulated substance on the water table into the well under both high and low groundwater conditions;
 - 4) Groundwater monitoring wells shall be sealed from the ground surface to the top of the filter pack;
 - 5) Monitoring wells or devices intercept the excavation zone or are as close to it as is technically feasible;

- 6) The continuous monitoring devices or manual methods used can detect the presence of at least $\frac{1}{8}$ inch of free product on top of the groundwater in the monitoring wells.
 - A) The continuous monitoring devices must be fixed sensors mounted permanently inside the well or samples must be taken by a mechanical bailer capable of detecting the presence of at least $\frac{1}{8}$ inch of free product on top of the groundwater in the monitoring wells.
 - B) Groundwater monitoring must be done monthly and a log of the inspection made showing the date of the inspection, initials of the person conducting the inspection, and results of the well sampling;
 - 7) Within and immediately below the UST excavation zone, the site is assessed to ensure compliance with the requirements in subsections (f)(1) through (5) and to establish the number and positioning of monitoring wells or devices that will detect releases from any portion of the tank that routinely contains product;
 - 8) Monitoring wells are clearly marked and secured to avoid unauthorized access and tampering;
 - 9) As of September 1, 2010, the minimum diameter of newly installed groundwater monitoring wells shall be 8 inches; and
 - 10) An adequate number of groundwater monitoring wells shall be provided to ensure that a release can be detected from any portion of the tank based upon the direction of groundwater flow and the tank placement. Adequacy of the wells is subject to approval of OSFM on the applicable permit. Beginning May 1, 2003, an adequate number of monitoring wells shall require a minimum of 2 8-inch diameter monitoring wells for the first tank and one additional well for each additional tank installed. The wells will be of manufactured slotted or perforated type. They shall be at opposite ends and corners, one foot below the invert elevations of the lowest UST.
- g) Interstitial Monitoring. Interstitial monitoring between the UST and a secondary barrier immediately around or beneath it, or interstitial monitoring as required by Sections 175.400(a) and 175.420(b) and meeting the requirements of this Section, may be used but only if the system is designed, constructed and installed to detect a leak from any portion of the tank that routinely contains product. All tanks permitted on or after February 1, 2008 must be equipped with interstitial monitoring sensors. When required to make tank or piping interstitial monitoring functional, the appropriate containment (e.g., under-dispenser containment, tank containment sumps or junction sumps) shall be installed. All existing interstitial monitoring systems and sensors shall be maintained and, beginning September 8, 2008, may not be removed irrespective of whether the leak detection is secondary or redundant to other forms of leak detection. If the interstitial monitoring is not functional or not operating properly it shall promptly be repaired or replaced and any necessary measures to prevent false positive and false negative readings shall be implemented.
- 1) Interstitial monitoring must also meet one of the following requirements:
 - A) For double-wall USTs, the sampling or testing method can detect a release through the inner wall in any portion of the tank that routinely

contains product;

- B) For USTs existing prior to February 1, 2008 and with a secondary barrier within the excavation zone, the sampling or testing method used can detect a release between the underground storage tank system and the secondary barrier.
- i) The secondary barrier around or beneath the UST consists of artificially constructed material that is sufficiently thick and impermeable (not in excess of 0.000001 cm/sec for the regulated substance stored) to direct a release to the monitoring point and permit its detection;
 - ii) The barrier is compatible with the regulated substance stored so that a release from the UST will not cause a deterioration of the barrier allowing a release to pass through undetected;
 - iii) For cathodically protected tanks, the secondary barrier shall be installed so that it does not interfere with the proper operation of the cathodic protection system;
 - iv) The groundwater, soil moisture or rainfall will not render the testing or sampling method used inoperative so that a release could go undetected for more than 30 days;
 - v) The site is assessed to ensure that the secondary barrier is always above the groundwater and not in a 25-year flood plain unless the barrier and monitoring designs are for use under those conditions;
 - vi) Monitoring wells are clearly marked and secured to avoid unauthorized access and tampering; and
 - vii) An adequate number of monitoring wells shall be provided to ensure that a release can be detected from any portion of the tank. Adequacy of the number of the wells is subject to the approval of OSFM.
- C) For tanks with an internally fitted liner, an automated device can detect a release between the inner wall of the tank and the liner, and the liner is compatible with the substance stored.
- 2) The interstitial monitoring system must be tested every year to verify its operation and records from the 2 previous tests must be kept on site, or available within 30 minutes or before OSFM completes its inspection, whichever is later. Testing of the system sensors shall be done in such a way as to verify their function but not damage the sensors. This testing shall be done by a licensed contractor. Interstitial monitoring must also comply with the requirements of Section 175.640.
- 3) The operability of the interstitial monitoring sensors shall be inspected and verified by the owner/operator every 30 days. Pursuant to Section 175.650(e), records for the previous 2 years must be kept on site or available within 30 minutes or before OSFM completes its inspection, whichever is

later.

h) Statistical Inventory Reconciliation (SIR)

- 1) The company that uses this method shall provide OSFM a written affirmation that their data collection staff is trained in the data gathering procedures and that only trained staff will be utilized for data collection. Each tank monitored by SIR shall be identified to OSFM in writing within 30 days after the commencement of the monitoring, specifying tank size, product stored, facility location and any other pertinent identification information necessary. SIR data shall be compiled and analyzed once each month to determine if a release has occurred, and the results put into a monthly report that is maintained by the facility.
 - 2) SIR methods may only be used in conjunction with precision tank tightness testing conducted annually, starting with the time that SIR is first used. An additional precision tank tightness test pursuant to subsection (c) shall be mandatory if any data analysis indicates a possible release or is inconclusive or indeterminate, or for any test result other than a pass.
 - 3) The measurement of any water level in the bottom of the tank is made to the nearest $\frac{1}{8}$ inch at least once a month.
 - 4) New requests to use SIR after May 1, 2003 will no longer be accepted. If SIR is discontinued on a UST, SIR will not be allowed again.
 - 5) After January 1, 2006, SIR may not be used on systems with blending pumps or siphon tanks.
- i) Other Methods. Any other type of release detection method or combination of methods, approved by OSFM, may be used if the owner or operator can demonstrate that the method can detect a release as effectively as any of the methods allowed in subsections (c) through (g). Demonstration of any such method shall be in writing submitted to OSFM. In comparing methods, OSFM shall consider the size of release that the method can detect and the frequency and reliability with which it can be detected. If the method is approved, the owner or operator shall comply with any conditions imposed by OSFM on its use to ensure the protection of human health or the environment. Before the utilization of the method, OSFM shall issue written approval.
- j) One copy of each independent third-party evaluation and its protocol, for the release detection methods in subsections (c), (d), (e), (g), (h) and (i), shall be submitted to OSFM as part of the permit application process. Any deviation from the third-party evaluation shall be submitted to OSFM for approval with the permit application, including, but not limited to, an evaluation by a licensed professional engineer finding that the release detection system as installed meets the performance requirements of 40 CFR 280 and this Part and the performance claims established by the independent third party evaluation and its protocol. For requirements regarding listing of components used with alternative or blended fuels, see Section 175.415.

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SECTION 175.640 METHODS OF AND REQUIREMENTS FOR RELEASE DETECTION FOR PIPING

Section 175.640 Methods of and Requirements for Release Detection for Piping

Owners and operators of petroleum USTs shall provide release detection for all piping containing regulated substances. The release detection must meet the requirements specified in this Section.

- a) Pressurized piping systems shall comply with the following requirements:
 - 1) Both new and existing pressurized piping installations shall be equipped with automatic line leak detectors.
 - 2) Every pressurized piping line installed after February 1, 2008 shall be equipped with interstitial monitoring sensors at all piping sumps, dispenser sumps, and piping junction sumps. As of September 1, 2010, these sensors must immediately shut off the submersible pump supplying that line upon detection of a release, except for USTs serving emergency power generators. Sensors for USTs serving emergency power generators shall trigger a local alarm upon the detection of a release. The automatic shutoff shall be deactivated in any UST serving emergency power generators when that function has been previously installed. Pursuant to Section 175.630(g), all interstitial monitoring sensors shall be tested annually, and the sensors inspected for operability at least once per month and a record of the inspection results generated.
 - 3) All new and existing sump sensors must be installed so as to detect liquid below the lowest contained entry point.
 - 4) Mechanical and electronic line leak detectors that alert the operator to the presence of a leak by restricting or shutting off the flow of regulated substances through piping or triggering an audible or visual alarm may be used only if they detect leaks of 3 gallons per hour at 10 pounds per square inch line pressure within one hour, except for USTs serving emergency power generators. All line leak detectors must have a functionality test performed annually. Self-diagnosing line leak detectors are not alone sufficient to meet the requirement for an annual functionality test. Automatic line leak detectors for USTs serving emergency power generators shall trigger a local alarm upon the detection of a release. Any automatic flow restriction or shutoff shall be deactivated in pressurized

piping serving emergency generators when that function has been previously installed.

5) In addition to utilizing automatic line leak detectors, pressurized piping systems shall utilize either line tightness testing pursuant to this subsection (a)(5) or monthly monitoring pursuant to subsection (c). Line tightness testing requirements may be met by one of the following methods:

- A) Pressurized lines must have an annual precision test that is capable of detecting a 0.1 gallon per hour leak rate at 1.5 times the operating pressure for 30 minutes. Use of an inert gas to pressurize piping is also acceptable. Use of air to pressurize piping that contains product is prohibited.
- B) The use of electronic line leak detection that is able to detect a 0.1 gallon per hour leak at 1.5 times the operating pressure in an annual test of the line, with the records of the 2 most recent annual tests kept on site or available within 30 minutes or before OSFM completes its inspection, whichever is later.
- C) A method meeting the requirements of the NWGLDE publication "List of Leak Detection Evaluations for Storage Tank Systems", as referenced in 41 Ill. Adm. Code 174.210, or, if unavailable, as approved by OSFM.

b) Suction lines and systems must comply with the following requirements:

1) American Suction

- A) As of September 1, 2010, every American suction piping line shall be equipped with interstitial monitoring sensors at all piping sumps, dispenser sumps and piping junction sumps that will immediately shut off the supply of product at the dispenser upon the detection of a release, except for USTs serving emergency power generators. Sensors for USTs serving emergency power generators shall trigger a local alarm upon the detection of a release. The automatic shutoff shall be deactivated in any UST serving emergency power generators when that function has been previously installed. All interstitial monitoring sensors shall be tested annually pursuant to the requirements of Section 175.630(g). All interstitial monitoring sensors shall be inspected for operability at least once per month and a record of the inspection results generated.
- B) All American suction lines shall be tested annually using positive pressure of at least 7 psi for 30 minutes, or, using a monthly monitoring method as approved by OSFM.

2) European suction lines do not require line leak detection or a precision line test if they are designed and constructed to meet the following:

- A) The below grade piping operates at less than atmospheric pressure;
- B) The below grade piping is sloped so that the contents of the pipe will drain back into the storage tank if the suction is released;

- C) Only one check valve is included in each suction line;
 - D) The check valve is located directly below and as close as practical to the suction pump; and
 - E) A method is provided that allows compliance with subsections (b)(2)(B), (C) and (D) to be readily determined as of the time of OSFM inspection.
- 3) Suction systems that do not meet the requirements of subsections (b)(2)(A) through (E) shall be classified as American suction and subject to the requirements for American suction in subsection (b)(1). European suction piping meeting the requirements of subsections (b)(2)(A) through (E) remains subject to requirements for under-dispenser containment pursuant to Section 175.410.
- c) Any of the methods in Section 175.630(e) through (g) and (i) may be used if they are designed to detect a release from any portion of the underground piping that routinely contains regulated substances, as approved by OSFM. SIR is not acceptable as a form of line leak detection. Precision testing is not a stand-alone method for line leak detection.
 - d) Existing interstitial monitoring systems and sensors shall be maintained and, beginning September 8, 2008, may not be removed irrespective of whether the leak detection is secondary or redundant to other forms of leak detection. If the interstitial monitoring is not functional or not operating properly it shall promptly be repaired or replaced and any necessary measures to prevent false positive and false negative readings shall be implemented.
 - e) One copy of an independent third-party evaluation and its protocol for each piping release detection method shall be submitted to OSFM as part of the permit application process. Any deviation from the third-party evaluation shall be submitted to OSFM for approval with the permit application, including but not limited to an evaluation by a licensed professional engineer finding that the release detection system as installed meets the performance requirements of 40 CFR 280 and this Part and the performance claims established by the independent third-party evaluation and its protocol. See also Section 175.415 regarding compatibility with product stored.

(Source: Amended at 37 Ill. Reg. 13443, effective August 1, 2013)

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SECTION 175.650 RELEASE DETECTION AND CATHODIC PROTECTION
RECORDKEEPING**

Section 175.650 Release Detection and Cathodic Protection Recordkeeping

UST owners or operators shall maintain records in accordance with 41 Ill. Adm. Code 176.430, demonstrating compliance with all applicable Sections of this Subpart F. Unless stated otherwise below, all records shall be maintained for at least the 2 most recent years and shall be kept on site or available within 30 minutes, or before OSFM completes its inspection, whichever is later, via fax, email or other transfer of information. The failure to maintain or produce the records required under this Section may result in OSFM's issuance of a red tag for the tank or tanks at issue pursuant to 41 Ill. Adm. Code 177 indicating non-compliance with the rules of OSFM and prohibiting any further deposit of regulated substances into the tank or tanks subject to a red tag in the event that testing with corresponding documentation is not forthcoming within 30 days. These records shall include the following:

- a) All written performance claims pertaining to any release detection system used and the manner in which these claims have been justified or tested by the equipment manufacturer or installer, shall be maintained for the life of the UST release detection equipment;
- b) The results of any sampling, testing or monitoring conducted or otherwise required shall be maintained for the required 2-year period, except that the results of tank tightness testing conducted in accordance with Section 175.630(c) shall be retained until the next test is conducted;
- c) Written documentation of all calibration, maintenance and repair of release detection equipment permanently located on site shall be maintained for 5 years after the date of installation, and thereafter for 3 years after the servicing work is completed. Any schedules of required calibration and maintenance provided by the release detection equipment manufacturer shall be retained for the life of the UST release detection equipment;
- d) All records from the last 2 cathodic protection total system tests by a qualified cathodic protection tester pursuant to a 3-year cycle must be maintained on site; and
- e) At the time of a compliance inspection/audit, the following shall be verified:
 - 1) Corrosion Protection

- A) Lining inspections records shall be maintained for the life of the UST, and the most recent inspection record shall be kept on site pursuant to Section 175.650(e).
 - B) All corrosion protection records must be maintained for the time periods required under Section 175.510.
- 2) Tank Leak Detection
- A) Manual Tank Gauging. Weekly inventory records, monthly reconciliation records, annual tightness test results, and related records shall be maintained.
 - B) Interstitial Monitoring. Records of interstitial monitoring of tanks and testing of interstitial monitoring systems must be maintained. The records can be from an ATG system showing the interstitial monitor's status (pass/normal/other) on a print out tape or by maintaining a log showing date of inspection, initials of inspector and status of system (pass/normal/other).
 - C) Inventory Control. Pursuant to Section 175.630(a), a precision tank tightness test must be performed at 5 years and 10 years after corrosion protection installation and prior to changing leak detection methods. Daily inventory control records and monthly reconciliation records shall be maintained for 2 years and tightness test records shall be maintained until the next tightness test is conducted.
 - D) Automatic Tank Gauge. A print out tape of the tank leak test showing one pass per tank per month must be kept. If no tape is available from the unit, a log showing date, initials of person conducting the test and leak results shall be maintained.
 - E) SIR. Annual tank tightness test results and monthly SIR monitoring reports shall be maintained. At the commencement of SIR monitoring, a lag time of 60 days is allowed for the compilation of data and the generation of the monthly report for that data.
 - F) Vapor and Groundwater Monitoring. A monthly record must be taken on a log showing date of each monthly inspection, results/status (pass or fail), and the initials of the party doing the inspection for each vapor monitoring sensor or groundwater monitoring well with records maintained.
- 3) Line Leak Detection
- A) Unless otherwise indicated in this Part, all line leak detection records, including any required line tightness testing results, shall be maintained for a period of at least 2 years.
 - B) Interstitial monitoring records for lines shall comply with the same requirements and be maintained in the same manner as interstitial monitoring for tanks.

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SECTION 175.700 REPAIRS ALLOWED**

Section 175.700 Repairs Allowed

Owners and operators of USTs shall ensure that repairs will prevent releases due to structural failure or corrosion as long as the UST is used to store regulated substances. Any hole or penetration made into a tank, including, but not limited to, any bung openings or any entrance way established for interior lining inspection, shall be installed and closed as per this Section.

- a) Repairs to USTs shall be properly conducted in accordance with manufacturer's recommended procedures and 41 Ill. Adm. Code 174 through 176. For repairs involving tank penetration or tank entry, the vapor freeing and inerting procedures and related requirements of Sections 175.500(a) and (c) and 175.830(a) shall be followed. No welding or cutting will be allowed inside the tank in conducting repairs.
- b) Repairs to fiberglass-reinforced plastic tanks shall be made by the manufacturer's authorized representative or a representative of any fiberglass tank manufacturer in accordance with NLP 631, incorporated by reference in 41 Ill. Adm. Code 174.210.
- c) Metal pipe sections and fittings that have released product as a result of corrosion or other damage shall be replaced. The entire pipe run shall be replaced upon finding a second corrosion-related piping leak in the wall of the same pipe run. Fiberglass pipes and fittings may be repaired in accordance with the manufacturer's specifications. All repairs shall comply with the requirements of Section 175.420.
- d) Repaired tanks and piping shall be tightness tested in accordance with Sections 175.630(c) and 175.640(a)(5) prior to being brought back into use and within 30 days following the date of the completion of the repair, except as provided in this subsection (d)(1) through (3).
 - 1) The repaired tank is internally inspected in accordance with Section 175.500;
 - 2) The repaired portion of the UST is monitored monthly for releases in accordance with a method specified in Section 175.630(d) through (h); or
 - 3) Another test method is used that is determined by OSFM to be not less protective of human health and the environment than those listed in

subsections (d)(1) and (2); before the utilization of any such method, it shall be submitted to OSFM in writing, and OSFM shall issue written approval.

- e) UST owners or operators shall maintain records of each repair for the remaining operating life of the UST that demonstrate compliance with the requirements of this Section. The last 2 years of records shall be retained on site.
- f) All materials used to make necessary repairs shall comply with Subpart D of this Part.
- g) When a tank is determined to be leaking, it can be permanently abandoned-in-place (subject to Section 175.840), removed (subject to Section 175.830), replaced (subject to Section 175.Subpart D) or repaired (subject to this Section).
- h) Removal or abandonment-in-place of a leaking tank shall be in compliance with Sections 175.830 and 175.840. Leaking piping shall be removed or abandoned-in-place in compliance with these Sections.
- i) For permit applications received prior to January 1, 2011, storage tanks may be lined if done in compliance with Section 175.500.

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SECTION 175.710 EMERGENCY REPAIRS**

Section 175.710 Emergency Repairs

- a) An emergency consists of a defect in a UST that is causing or threatens to cause harm to human health or the environment, or presents a threat to fire safety, and contact of the regulated substance with the defect cannot be prevented. In the event of a release, release reporting, investigation and initial response shall be conducted pursuant to 41 Ill. Adm. Code 174, 175 and 176. All emergency repairs require a permit applied for after-the-fact on the next business day and require a final inspection scheduled pursuant to Section 175.320 within 10 days after issuance of the permit.
- b) If minor or temporary repairs are required to correct the defect, only the defective area can be repaired.
- c) Economic loss or the threat of economic loss does not constitute an emergency.
- d) Minor or temporary repairs, as a result of an emergency, to tanks or piping may begin on weekends, holidays and after business hours, when the repairs would otherwise require a permit prior to being performed. Permit applications are required for this UST activity and shall be submitted to OSFM after-the-fact, on the next business day. All repairs shall be inspected and tested prior to the repaired UST being put back into operation, unless otherwise directed by OSFM.
- e) When the emergency prompting the need for repairs occurs on a business day, the contractor shall contact OSFM and obtain authorization to proceed with the emergency repair. After obtaining authorization, the contractor shall fax a statement to OSFM indicating what facility and what specific repair is being requested.
- f) Repairs completed in violation of 41 Ill. Adm. Code 172, 174, 175, 176 and 177 may be required to be removed, exposed or replaced at the discretion of OSFM.

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SECTION 175.720 DEFECTIVE OR NON-COMPLIANT EQUIPMENT AND
EMERGENCY ACTION BY OSFM**

Section 175.720 Defective or Non-Compliant Equipment and Emergency Action by OSFM

- a) Pursuant to Section 6 of the Gasoline Storage Act [430 ILCS 15/6], whenever necessary or appropriate to assure that the public health or safety is not threatened, OSFM shall have the authority to undertake emergency action whenever there is a release or substantial threat of a release of petroleum or regulated substances from a UST.
- b) Failed precision tank or line tests and defective tank or piping leak detection equipment will require that particular tank system to be shut down until repaired and functioning properly. Another approved method of leak detection may be implemented if approved by OSFM on an interim basis.

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SECTION 175.800 REMOVAL OR CHANGE-IN-SERVICE RECORDS**

Section 175.800 Removal or Change-in-Service Records

Owners or operators shall maintain records in accordance with 41 Ill. Adm. Code 176.430 that are capable of demonstrating compliance with removal or change-in-service requirements under all applicable Sections of this Subpart H. The results of the excavation zone assessment required in 41 Ill. Adm. Code 176.360 shall be maintained for the time period specified in 41 Ill. Adm. Code 176.330 following completion of a removal or change-in-service in one of the following ways:

- a) By the owners or operators who took the UST out of service;
- b) By the current owners or operators of the UST site; or
- c) By mailing these records to OSFM if they cannot be maintained at the facility where the tank has been removed.

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SECTION 175.810 TEMPORARY CLOSURE**

Section 175.810 Temporary Closure

- a) USTs may be put into a temporary closure status provided they meet the performance standards for new UST systems or the upgrading requirements specified in 41 Ill. Adm. Code 174 through 176 and 40 CFR 280, except that spill and overfill prevention equipment requirements do not have to be met. The USTs may continue in a temporary closure status for a period of 5 years from the date of last use provided they meet the following requirements:
 - 1) The tank and product lines shall be emptied immediately upon placing the UST in a temporary closure status. The UST is empty when all materials have been removed using commonly employed practices so that no more than 2.5 centimeters (one inch) of residue, or 0.3 percent by weight of the total capacity of the UST system, remain in the system. Any UST placed in a temporary closure status, formerly known as out of service status, prior to September 1, 2010 and containing more than one inch of product may be allowed to continue in temporary closure status as long as release detection is maintained during its remaining temporary closure period.
 - 2) Cathodic protection shall be maintained and operational for all tanks and lines, and tested as required, to include flex/pipe connectors. This will include any monthly logs that need to be maintained.
 - 3) OSFM must receive a written request, within 30 days after the date the tank was last used, requesting temporary closure status. The request shall be submitted on forms provided by OSFM at www.state.il/OSFM/PetroChemSaf/Notify.pdf.
 - 4) Vent lines shall be left open and functioning.
 - 5) Within 7 days, the owner/operator shall cap and secure all product lines and secure all pumps, manways and ancillary equipment.
 - 6) A UST may be put back in operation any time during the first 12 months, without meeting the requirements of subsections (b) and (c), subject to the requirement that OSFM be notified in writing on OSFM forms at www.state.il/OSFM/PetroChemSaf/Notify.pdf at least 10 days prior to operation.

- 7) If there is no ongoing incident cleanup related to the tanks that are the subject of the temporary closure request, a site assessment using the procedures of 41 Ill. Adm. Code 176.330 shall be conducted prior to bringing the UST back into service, and the report required under 41 Ill. Adm. Code 176.330(c) shall be submitted to OSFM.
 - 8) The owner/operator shall inspect the UST for compliance with the temporary closure requirements of this subsection (a) every 6 months, and for each inspection, the owner/operator shall attest, under penalty of perjury and on a form provided by OSFM at www.state.il.us/osfm/PetroChemSaf/home.htm, under "downloadable applications", that the UST is in compliance with the temporary closure requirements of this subsection (a).
- b) Failure to maintain corrosion protection at any point during the remaining 4-year temporary closure period referenced in subsection (c) shall require the removal of the tanks. Failure to maintain release detection on any UST placed in a temporary closure status, formerly known as an out of service status, prior to September 1, 2010 and containing more than one inch of residue shall require the owner/operator to provide OSFM with a site assessment and passing results for tank and line precision testing within 30 days after issuance of an NOV in order for the tanks to remain in a temporary closure status. Immediately after tank and line testing the tanks shall be emptied to one inch or less. Release detection is not required as long as all materials have been removed using commonly employed practices so that no more than 2.5 centimeters (one inch) of residue, or 0.3 percent by weight of the total capacity of the UST system, remain in the system.
 - c) Systems that have been out of use for over one year but less than 5 years may be put back in service provided that the following additional requirements are met:
 - 1) Tanks and lines shall be precision tested and proven sufficient.
 - 2) Tank and line release detection is tested and proven operational.
 - 3) Cathodic protection is tested and proven sufficient.
 - 4) A site assessment is conducted prior to bringing the UST back into service.
 - 5) All tests referenced in subsections (c)(1) through (c)(3) must be performed not more than 90 days and not less than 30 days before placing the tank back in service and submitted to OSFM at least 10 days prior to reopening so that a certification audit can be performed.
 - d) Single-wall USTs over 30 years old that have been in temporary closure, formerly known as out-of-service, more than one year shall be removed rather than placed back into service.
 - e) If a UST is not placed back into service within 5 years from the date of last use, the tank system shall be removed within 60 days after the conclusion of the 5-year period. USTs with double-walled tanks and piping equipped with interstitial monitoring shall not be subject to the 5-year limit during the period the tank manufacturer's warranty is in place if all of the following requirements are met:

- 1) Corrosion protection has been and continues to be maintained;
- 2) A site assessment under Section 175.330 has been performed;
- 3) Any UST components found to be defective are replaced in the 45 days prior to any return to active use; and
- 4) All requirements for return to use under subsection (c) and this Section are met.

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SECTION 175.820 CHANGE-IN-SERVICE OF USTS**

Section 175.820 Change-in-Service of USTs

- a) From a Regulated Substance to a Non-Regulated Substance. Continued use of a UST to store a non-regulated substance (so that it is no longer classified as a UST) is considered a change-in-service. Before a change-in-service, owners or operators shall empty and clean the tank by removing all liquid and accumulated sludge and conduct a site assessment. The minimum requirements for the site assessment will be the procedures and requirements of 41 Ill. Adm. Code 176.330. However, a change-in-service may only occur during the first 2 years, commencing with the date of installation of the tank. A tank system classified as a UST may not be re-classified as being a non-UST unless there has been a change-in-service as provided in this Section.
- b) From a Regulated Substance to a Regulated Substance. A change-in-service also consists of a conversion of a petroleum UST to a non-compatible petroleum UST or a hazardous substance UST to a non-compatible hazardous substance UST or a petroleum UST to a hazardous substance UST and vice versa. Before a change in service, owners or operators shall empty and clean the tank by removing all liquid and accumulated sludge in accordance with the requirements of Sections 175.500(a) and (c) and 175.830(a), including API 2015, incorporated by reference in 41 Ill. Adm. Code 174.210. The owner or operator shall verify that the UST meets the requirements of a hazardous material system if being changed over to a hazardous material substance, including requirements for secondary containment with interstitial monitoring after December 22, 1998. (See Section 175.415(c) and (d) regarding when an existing UST is converted to a blended or alternative fuel.)
- c) From a Non-Regulated Substance to a Regulated Substance. A non-UST, which is used to store a non-regulated substance, may not be converted to a UST unless the tank has been re-certified and is in compliance with all applicable upgrade requirements for newly installed USTs. A waste oil tank that is supplying fuel to a waste oil furnace and is taken out of service shall be no longer classified as a heating oil tank. If the tank does not meet all upgrade requirements for release detection, spill, overfill and corrosion protection, the tank shall be removed.
- d) For all activity related to a change-in-service, the equipment must be compatible with the product being stored and notification of change-in-service must be provided on OSFM forms at www.state.il/OSFM/PetroChemSaf/Notify.pdf to

OSFM not less than 30 days prior to the change-in-service.

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SECTION 175.830 REMOVAL OF USTs**

Section 175.830 Removal of USTs

- a) For tank removals, the following requirements and procedures shall be followed:
 - 1) Compliance with subsections (a)(2) through (a)(18) is the responsibility of the contractor.
 - 2) Except as otherwise provided in this Section, the procedures of API 1604, incorporated by reference in 41 Ill. Adm. Code 174.210, shall be followed for vapor freeing and inerting procedures.
 - 3) Secure proper permitting and schedule removal date with OSFM. A new permit and fee will be required when there is a failure to meet the Date Certain schedule established under Section 175.320, including not showing for the inspection, not being completely ready for the inspection, allowing the permit to expire before the inspection, or not cancelling the job 24 hours prior to the scheduled activity. (See Section 175.300 for additional permit requirements.)
 - 4) Maintain all combustible gas indicator equipment according to manufacturer's specifications.
 - 5) Establish an exclusion zone within which smoking is prohibited, which shall include all hazardous (classified) locations/areas where work related to removal is being conducted. The use of spark producing/non-explosion proof equipment is prohibited in the vapor hazard area prior to removal of product and sludges and attaining the lower explosive limit (LEL)/oxygen levels required in subsection (a)(9).
 - 6) Excavate to the top of the tank. Drain product from piping into the tank or into approved drums, being careful to avoid any spillage to the excavation area. Safely disconnect product piping from the tank, and remove the piping. Pipe trenches shall remain open for inspection by an OSFM Storage Tank Safety Specialist (STSS). Further excavation below the top of the tank is not allowed until STSS has verified that tank conditions meet the LEL/oxygen criteria of subsection (a)(9).
 - 7) Remove all liquids from the tank using explosion-proof pumps or hand

pumps. When suctioning product out of tanks, plastic pipes shall not be allowed as a suction tube.

- 8) Regularly monitor the tank atmosphere and the excavation area with a combustible gas indicator for flammable or combustible vapor concentration until the tank is removed from both the excavation and the site. Monitoring the UST shall be done at 3 levels in the tank: top, middle and bottom. A confined space entry permit shall be obtained prior to tank entry and MSDS sheets must be on site.
- 9) Regularly monitor the tank to insure explosive conditions do not exist. A maximum of 5% of the LEL, or 5% or less oxygen concentration, shall be attained before the tank is considered safe for removal, instead of 20%, as required in the API 1604. Dry ice shall not be allowed as a method of inerting tanks as referred to in API 1604.
- 10) Bond all devices to the tank and ground the tank to a separate ground when vapor freeing the tank with compressed air or using inert gases under pressure. When using inert gases the cylinder shall be equipped with a pressure gauge, so that no more than 5 psi can be discharged into the tank during vapor freeing procedures. To ensure and maintain proper grounding and bonding, the connections shall be tested by the contractor for continuity. This testing shall be done with equipment designed for continuity testing. When vapor freeing of tanks, plastic pipes shall not be allowed as a vent tube on eductors.
- 11) Plug and cap all accessible tank holes. One plug should have an 1/8 inch vent hole.
- 12) Excavate around the tank to prepare for removal. This shall include excavation along one side and one end, from top to bottom.
- 13) A STSS shall be on site before hot work can proceed.
- 14) With STSS on site, remove tank from the ground. Equipment with sufficient lifting capacity shall be used to lift the tank from the excavation and must be rated as appropriate for the particular site and excavation.
- 15) Protective Equipment and Tank Cleaning Requirements
 - A) Personal protection requirements for tank cleaning personnel shall, at a minimum, include the following;
 - i) supplied air with full face mask;
 - ii) level B personal protective equipment with body harness and tag line;
 - iii) protective booties;
 - iv) continual monitoring of LEL and oxygen during cleaning;
 - v) attendant/observer;

- vi) positive flow of fresh air supplied during all cleaning operations.
 - B) Requirements in subsection (a)(15)(A) shall not apply in the event that no physical entry is made into the tank.
- 16) Any UST removed from the excavation zone shall be properly cleaned on site the day of the removal and removed from the site within 24 hours.
 - 17) Tanks larger than 2,000 gallons in capacity shall have holes or openings no less than 3 feet x 3 feet, one on each end or side, for cleaning. Tanks less than 2,000 gallons capacity shall have one entire side removed from end to end and shall be no less than 3 feet wide.
 - 18) The use of spark producing/non-explosion proof equipment is prohibited in the vapor hazard area prior to attaining the LEL/oxygen levels required in subsection (a)(9).
 - 19) The tank owner must file an amended Notification of Underground Tanks on forms provided by OSFM at www.state.il.gov/OSFM/PetroChemSaf/Notify.pdf with OSFM within 30 days after the tank removal.
 - 20) If an STSS has observed evidence of a release, the owner, operator or designated representative of the UST must notify the Illinois Emergency Management Agency. This is to be done at the site immediately following the field determination and the incident number shall be given to the STSS prior to his/her leaving the site.
 - 21) All tank removals require a site assessment pursuant to 41 Ill. Adm. Code 176.330.
 - 22) Any tank being removed without an OSFM permit will be required to be put back in the excavation and vented to 12 feet above grade if it has not been removed from the site and covered with backfill until a permit and licensed contractor can remove it properly.
- b) Disposal of Tanks
- 1) If a tank is to be scrapped as junk, it shall be retested for combustible or flammable vapors and, if necessary, rendered gas free.
 - 2) If the tank last contained leaded gasoline, an unknown petroleum product or a hazardous substance, it may only be scrapped or junked, recertified, or discarded at a special waste or hazardous waste landfill as designated by Illinois EPA regulations. If tanks are being re-certified, the contractor must give written notice to OSFM on the removal permit as to the intent to re-certify and re-use the tanks being removed. The re-certified tank must be re-installed within 6 months from removal.
 - 3) Removed tanks may not be reused for any purpose other than those allowed by OSFM rules (proper disposal at an approved landfill, scrapped or junked after proper cleaning, or recertified pursuant to OSFM rules).
 - 4) Compliance with this subsection (b) is the responsibility of the contractor.

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AND THE STORAGE, TRANSPORTATION, SALE AND USE OF PETROLEUM AND
OTHER REGULATED SUBSTANCES
SECTION 175.840 ABANDONMENT-IN-PLACE**

Section 175.840 Abandonment-in-Place

- a) No tank or piping may be abandoned-in-place unless the permit applicant demonstrates eligibility for a waiver of the removal requirement for the tank and/or piping. The waiver shall be granted only in the following instances:
 - 1) where it would be infeasible to remove the UST due to loss of adjacent or subjacent support of nearby structures, such as railroad tracks, streets (as defined in Section 1-201 of the Illinois Vehicle Code [625 ILCS 5/1-201]), and other USTs;
 - 2) removal is infeasible because of inaccessibility, as determined by OSFM; or
 - 3) in unusual situations where removal is infeasible due to other reasons, as determined by OSFM.
- b) In the event there is a delegation of authority to the City of Chicago to enforce UST rules and regulations, pursuant to the Gasoline Storage Act [430 ILCS 15/2], subject to the terms of such agreement, the City has the authority to modify subsection (d) of this Section, to issue permits to abandon in-place USTs located within the jurisdiction of the City and request records of abandonment-in-place; however, any criteria for abandonment-in-place shall be as stringent as that of OSFM. Tanks, inside the jurisdiction of the City of Chicago, which were abandoned-in-place prior to July 28, 1989 (the date of repeal of home rule by the City over USTs) in accordance with City laws, regulations or ordinances, need not be removed so long as a condition under subsection (a) allowing abandonment continues to exist.
- c) Tanks, outside the jurisdiction of the City of Chicago, filled with inert material, as described in subsection (d)(14), prior to October 1, 1985, need not be removed so long as a condition under subsection (a) allowing abandonment exists; however, the owners shall provide documentation of fill material and date of fill, upon request by OSFM. The documentation shall be a receipt or a written statement from the contractor who did the fill, a statement from the inspector who inspected the tank or a written statement from anyone designated by the State Fire Marshal or the Director of the Division of Petroleum and Chemical Safety.
- d) For UST abandonment-in-place, the following requirements and procedures shall be

followed:

- 1) An on-site evaluation shall be done by the owner or operator, or designated representative, to prepare an accurate Certification of Site Condition with site drawings. If the ability to abandon-in-place is questioned, a third party professional structural engineer may be used to determine the feasibility of removal in order to verify that the tank is or is not eligible to be abandoned in place pursuant to subsection (a).
- 2) Except as otherwise provided in this Section, the procedures of API 1604 shall be followed for vapor freeing and inerting procedures.
- 3) Proper permitting shall be obtained.
 - A) A complete plan or diagram of the area shall be provided and show the location of tanks, fill pipes, vent lines, sewers, streets, product lines and buildings;
 - B) A Certification of Site Condition shall be provided, which includes, but is not limited to, facility name and location, number and size of USTs involved and that the subject UST site is clean or contaminated. This Certification of Site Condition shall be based on a professional site assessment from soil sampling and this site assessment must accompany the site certification form (www.state.il.us/osfm/Techservices/doc/TS101-Abandonment_In_Place_032008.Doc); and
 - C) A description of the specific inert material to be used shall be indicated on the permit application.
- 4) All health and safety monitoring equipment shall be maintained according to manufacturer's specifications.
- 5) An exclusion zone shall be established, within which smoking is prohibited. The exclusion zone shall include all hazardous (classified) locations/areas where work related to abandonment-in-place is being conducted. The use of spark producing/non-explosion proof equipment is prohibited in the vapor hazard area prior to removal of product and sludges and attaining the LEL/oxygen levels required in subsection (d)(10).
- 6) Upon excavating to the top of the tank, on-site personnel shall drain product into approved drums or other approved receptacles and remove all piping except the vent line. Any associated piping to be abandoned-in-place shall be properly secured or capped and have prior approval by OSFM. Pipe trenches shall remain open for inspection by OSFM Storage Tank Safety Specialist (STSS). Further excavation below the top of the tank is not allowed until STSS is present and has verified that tank conditions meet the LEL/oxygen criteria of subsection (d)(10).
- 7) All liquids shall be removed from the tank using explosion-proof pumps or hand pumps.
- 8) The tank atmosphere and the excavation area shall be regularly monitored with a combustible gas indicator for flammable or combustible vapor

concentration. Monitoring the UST shall be done at 3 levels in the tank: top, middle and bottom. A confined space entry permit shall be obtained prior to tank entry and MSDS sheets must be on site.

- 9) Vapor freeing shall be done in accordance with API 1604, except that dry ice shall not be allowed as a method of inerting tanks. When vapor freeing the tank with compressed air or using inert gases under pressure, all devices shall be bonded to the tank and the tank shall be grounded to a separate ground. When using inert gases, the cylinder shall be equipped with a pressure gauge so that no more than 5 psi can be discharged into the tank during vapor freeing procedures. To ensure and maintain proper grounding and bonding, the connections shall be tested by the contractor for continuity. This testing shall be done with equipment designed for continuity testing. When vapor freeing a tank, plastic pipes shall not be allowed as a vent tube on eductors.
- 10) The tank shall be regularly monitored to insure that explosive conditions do not exist. A maximum of 5% of the LEL, or 5% or less oxygen concentration, shall be attained before the tank is considered safe for abandonment.
- 11) An STSS shall be on site before hot work can proceed.
- 12) A sufficient number of holes or openings shall be made in the tank for abandonment-in-place procedures if existing openings are not adequate.
- 13) Cleaning procedures shall be in accordance with API 2015, incorporated by reference in 41 Ill. Adm. Code 174.210. Protective respiratory equipment for tank cleaning personnel shall be the type that provides positive air pressure to a full-face mask throughout the breathing cycle, in accordance with API 2015.
- 14) After cleaning, on-site personnel shall proceed to introduce an OSFM-approved, inert material through openings in the top of the tank to minimize any surface settling subsequent to abandonment of the tank in place. Allowed inert material shall be limited to sand, gravel, clay, bentonite or inert material mixed with portland cement to increase flowability. The portland cement concentration may not exceed 50 lbs. per cubic yard of mixed material. Any other materials must be approved by OSFM during the permit process. The procedure for filling shall be in accordance with API 1604.
- 15) After the tank is filled with inert material, all tank openings shall be plugged or capped unless it was necessary to cut open the tank top. The vent line shall be disconnected, capped and removed.
- 16) The tank owner must file an amended Notification of Underground Tanks on OSFM forms at www.state.il.gov/OSFM/PetroChemSaf/Notify.pdf with OSFM within 30 days after the abandonment-in-place.
- 17) When a UST is abandoned-in-place, the owner of the UST shall keep a permanent record of the UST location, the date of abandonment-in-place and the procedure used for abandonment-in-place. Upon request by OSFM, Division of Petroleum and Chemical Safety, the owner shall forward a copy

of the record to OSFM, within 14 days after receipt of a written request by OSFM sent to the last known address by U.S. registered or certified mail.

- e) When a UST is allowed to be abandoned-in-place, as specified in this Section, the abandoned-in-place UST shall be removed when the condition for issuing the abandonment permit no longer exists. The removal procedures shall be followed and a removal permit is required.
- f) Compliance with subsections (d)(1) through (d)(15) is the responsibility of the contractor.

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**SECTION 175.APPENDIX A UST ACTIVITY THAT CANNOT PROCEED WITHOUT AN
OSFM INSPECTOR ON SITE**

Section 175.APPENDIX A UST Activity that Cannot Proceed Without an OSFM Inspector on Site

In addition to obtaining a permit pursuant to 41 Ill. Adm. Code 175.300, the UST activities listed in this Appendix A will require that the inspection be scheduled with OSFM as an OSI, meaning under circumstances where the work cannot proceed in the absence of having an STSS on site. (See Section 175.320, regarding scheduling of UST activity.) Proceeding without completion of the required OSFM inspection is a violation of OSFM rules.

Tank or piping removal (with the exception of piping that is repaired or replaced within the same trench)
Abandonment-in-place, tanks or piping
UST hot work (if cutting or penetration of tank shell is involved, including for tank lining or lining inspection purposes)

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SECTION 175.APPENDIX B THE TYPE OF OSFM PERMIT REQUIRED FOR SPECIFIC PERMITTED UST ACTIVITIES

Section 175.APPENDIX B The Type of OSFM Permit Required for Specific Permitted UST Activities

Pursuant to Section 175.300 and 41 Ill. Adm. Code 174.440 and 174.450, the UST activities listed in this Appendix B will require the kinds of permits listed in this chart.

<u>Type of UST Activity</u>	<u>Permit Required</u>
Installation of a complete UST with all components, or installation of just the tank	Installation permit
Installation of any portion of a UST (except corrosion protection or lining)	Upgrade permit
Removal of an underground tank or underground piping (with the exception of piping that is repaired or replaced within the same trench)	Removal permit
Removal of underground piping when the piping is replaced or repaired all within the same trench	Upgrade permit (requires at least one employee certified in the decommissioning module)
Abandonment-in-place of any tank or piping	Abandonment-in-place permit
UST repair to make an existing UST part functional, including flex connector replacement but not including lining or corrosion protection	Upgrade permit
Tank lining or tank lining inspections	Lining permit
Emergency repairs (excluding corrosion protection)	Upgrade permit (see the procedures of Section 175.710)
Repair or install cathodic protection or corrosion protection, including on flex connectors (but see wristband/spike anodes below)	Cathodic protection permit
Manway installation (no separate upgrade or entry permit for a manway is required where the original lining permit or lining inspection permit includes the installation of a manway)	Upgrade permit
UST activity requiring the cutting or penetration of the tank shell in any way (no separate hot work permit required where a lining, upgrade	Hot work permit

or other permit is being issued)	
Installation, upgrade or removal of leak detection systems	Upgrade permit
New spill containment (except that replacement of spill containment is a like-for-like replacement that requires only notification to OSFM pursuant to Section 175.300)	Upgrade permit
Installation or replacement of a remote fill	Upgrade permit
New or replaced overflow prevention equipment (except that replacement of drop tube valves and ball floats are like-for-like replacements that require only notification to OSFM pursuant to Section 175.300)	Upgrade permit
Installation or replacement of dispensers where piping or any other transitional components at or below the shear valve (including the shear valve) are replaced at the same time	Upgrade permit
Installation or replacement of an ATG unit (except that replacement of ATG probes are like-for-like replacements that require only notification to OSFM pursuant to Section 175.300)	Upgrade permit
Installation or replacement of a flex connector (only)	Upgrade permit
Installation of wristband anodes or spike anodes on an existing flex connector (only)	Upgrade permit
Installation or replacement of a flex connector and wristband anodes or spike anodes on the flex connector (only)	Upgrade permit
Connecting a new or existing bulk load-out to a new or existing UST at a motor fuel dispensing facility	Upgrade permit (Installation permit if an entire UST is being installed)
Construction of a building or structure where loading or unloading or dispensing operations will occur	Installation permit
Site for the mobile fueling of commercial vehicle fleets (pursuant to Section 1(d)(C) of the Gasoline Storage Act [430 ILCS 15/2(1)(d)(C)])	Mobile fueling site permit (pursuant to 41 Ill. Adm. Code 174.440 and 174.450)
Tank vehicle to be used for the mobile fueling of commercial vehicle fleets (pursuant to Section 1(d)(C) of the Gasoline Storage Act [430 ILCS 15/2(1)(d)(C)])	Mobile fueling vehicle permit (pursuant to 41 Ill. Adm. Code 174.440 and 174.450)
Person, company, or other entity proposing to conduct mobile fueling using tank vehicles to be used for the mobile fueling of commercial vehicle fleets (pursuant to Section 1(d)(C) of the Gasoline Storage Act [430 ILCS 15/2(1)(d)(C)])	Mobile fueling contractor permit (pursuant to 41 Ill. Adm. Code 174.440 and 174.450)

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SECTION 175.APPENDIX C DERIVATION TABLE**

Section 175.APPENDIX C Derivation Table

The following table indicates the Sections of 41 Ill. Adm. Code 170 that formerly stated requirements identical to or related to those now located within this Part 175.

New Section	Old Section
175.100.....	170.400
175.200.....	170.150(a), (c), (e), 170.210(a), 170.310(d), 170.426(g)
175.210.....	170.150, 170.428(g)
175.220.....	170.310, 170.428(g)
175.230.....	None
175.240.....	None
175.250.....	170.145, 170.426(j), 170.428(e), (g), (m), 170.APPENDIX E
175.260.....	170.91, 170.160, 170.310(d), 170.426(l)
175.300.....	170.541, 170.APPENDIX E
175.310.....	170.542
175.320.....	170.543
175.330.....	170.441
175.400.....	170.420(a), (b)
175.405.....	170.420(c)
175.410.....	170.420(d)(19), 170.421(i)
175.415.....	170.470
175.420.....	170.420(d)(12),

	(13), 170.421
175.425.....	170.421(f)
175.430.....	170.422
175.435.....	170.423
175.440.....	170.424
175.445.....	170.425
175.450.....	170.91, 170.150(d)(5), (6), 170.160(g), (h), 170.310(a) (1), (2), 170.426, 170.428(a), (h), (i), (j), (k), (l), 170.546(a)
175.455.....	170.150(d)(2), 170.420(d)(1), 170.545, 170.672(e)
175.460.....	170.426(j), 170.428(b), (c), (e), (l), 170.APPENDIX E
175.465.....	170.420(b)(3), (4), 170.420(d), 170.546(b)
175.500.....	170.430
175.510.....	170.460, 170.480(e)
175.600.....	170.450
175.610.....	170.500
175.620.....	170.520
175.630.....	170.530
175.640.....	170.540
175.650.....	170.550
175.700.....	170.480
175.710.....	170.481
175.720.....	170.200, 170.427
175.800.....	170.660
175.810.....	170.411
175.820.....	170.630
175.830.....	170.670(a), (b), (c)
175.840.....	170.670(d)
175.APPENIDX A.....	None
175.APPENIDX B.....	None
175.APPENIDX C.....	None