

1 Pollution Control Agency

2

3 Adopted Permanent Rules Relating to Underground Storage Tanks

4

5 Rules as Adopted

6 PROGRAM SCOPE AND INTERIM STANDARDS

7 7150.0010 APPLICABILITY.

8 Subpart 1. **Scope.** The requirements of this chapter apply  
9 to all owners and operators of an underground storage tank  
10 system as defined in part 7150.0030, except as otherwise  
11 provided in this subpart and subparts 2 and 3. Any underground  
12 storage tank system listed in subpart 3 must meet the  
13 requirements of part 7150.0020.

14 Subp. 2. **Exclusions.** The following underground storage  
15 tank systems are excluded from the requirements of this chapter:

16 A. an underground storage tank system holding  
17 hazardous wastes listed or identified under chapter 7045 or Code  
18 of Federal Regulations, title 40, part 261, or a mixture of such  
19 hazardous waste and other regulated substances;

20 B. a wastewater treatment tank system that is part of  
21 a wastewater treatment facility regulated under United States  
22 Code, title 33, section 1317 or 1342;

23 C. equipment or machinery that contains regulated  
24 substances for operational purposes such as hydraulic lift tanks  
25 and electrical equipment tanks;

26 D. an underground storage tank system with a capacity  
27 of 110 gallons or less;

28 E. an underground storage tank system that contains a  
29 de minimus concentration of regulated substances;

30 F. an emergency spill or overflow containment  
31 underground storage tank system that is expeditiously emptied  
32 after use;

33 G. a farm or residential tank of 1,100 gallons or  
34 less capacity used for storing motor fuel for noncommercial  
35 purposes;

1 H. a tank of 1,100 gallons or less capacity used  
2 exclusively for storing heating oil for consumptive use on the  
3 premises where stored;

4 I. a septic tank;

5 J. a pipeline facility, including gathering lines,  
6 regulated under United States Code, title 49, chapter 24 or 29;

7 K. a surface impoundment, pit, pond, or lagoon;

8 L. a storm water or wastewater collection system;

9 M. a flow-through process tank; and

10 N. a storage tank situated in an underground area  
11 such as a basement, cellar, mineworking, drift, shaft, or tunnel  
12 if the storage tank is located upon or above the surface of the  
13 floor.

14 Subp. 3. Deferrals. Parts 7150.0100 to ~~7150.0430~~ and  
15 ~~7150.0600 to 7150.0640~~ 7150.0440 do not apply to any of the  
16 following types of underground storage tank systems:

17 A. wastewater treatment tank systems;

18 B. underground storage tank systems containing  
19 radioactive material that are regulated under the Atomic Energy  
20 Act of 1954, United States Code, title 42, sections 2011 to  
21 2296;

22 C. an underground storage tank system that is part of  
23 an emergency generator system at nuclear power generation  
24 facilities regulated by the Nuclear Regulatory Commission under  
25 Code of Federal Regulations, title 10, ~~section~~ part 50, Appendix  
26 ~~A7~~ and ~~part 7150.0700~~;

27 D. airport hydrant fuel distribution systems; and

28 E. underground storage tank systems with  
29 field-constructed tanks.

30 Subp. 4. Release detection deferrals. Parts 7150.0300 to  
31 7150.0350 do not apply to an underground storage tank system  
32 that stores fuel solely for use by emergency power generators.

33 Subp. 5. Heating oil underground storage tank deferrals.  
34 Parts 7150.0100 to ~~7150.0350~~ 7150.0440, except 7150.0120,  
35 subparts 2 and 6, and ~~7150.0600 to 7150.0640~~ do not apply to an  
36 underground storage tank system of over 1,100 gallons capacity

1 used exclusively for storing heating oil for consumptive use on  
2 the premises where stored.

3 7150.0020 INTERIM STANDARDS FOR DEFERRED UNDERGROUND STORAGE  
4 TANK SYSTEMS.

5 Subpart 1. **Interim standards.** No person may install an  
6 underground storage tank system listed in part 7150.0010,  
7 subparts 3 to 7 5, for the purpose of storing regulated  
8 substances unless the underground storage tank system, whether  
9 of single- or double-wall construction:

10 A. is installed according to requirements of the  
11 American Petroleum Institute Bulletin 1615 to the extent  
12 applicable, and all manufacturer's recommendations;

13 B. will prevent releases due to corrosion or  
14 structural failure for the operational life of the underground  
15 storage tank system;

16 C. is cathodically protected against corrosion,  
17 constructed of noncorrodible material, steel clad with a  
18 noncorrodible material, or designed in a manner to prevent the  
19 release or threatened release of any stored substance; and

20 D. is constructed or lined with material that is  
21 compatible with the stored substance.

22 Subp. 2. **Systems without corrosion protection.**

23 Notwithstanding subpart 1, an underground storage tank system  
24 without corrosion protection may be installed at a site that is  
25 determined by a corrosion expert not to be corrosive enough to  
26 cause it to have a release due to corrosion during its operating  
27 life. Owners and operators must maintain records that  
28 demonstrate compliance with the requirements of this subpart for  
29 the remaining life of the tank. The determination required by  
30 this subpart must be in accordance with the National Association  
31 of Corrosion Engineers, Standard RP-02-85.

32 7150.0030 DEFINITIONS.

33 Subpart 1. **Scope.** For the purposes of this chapter, the  
34 following terms and abbreviations have the meanings given them.  
35 Terms that are not specifically defined have the meanings given

1 them in Minnesota Statutes, sections 115.01, 115C.02, and 116.46.

2       Subp. 2. **Aboveground release.** "Aboveground release" means  
3 a release to the surface of the land or to surface water,  
4 including, but not limited to, releases from the aboveground  
5 part of an underground storage tank system and aboveground  
6 releases associated with overfills and transfer operations as  
7 the regulated substance moves to or from an underground storage  
8 tank system.

9       Subp. 3. **Agency.** "Agency" means the Minnesota Pollution  
10 Control Agency.

11       Subp. 4. **Appurtenances.** "Appurtenances" means devices  
12 such as piping, fittings, flanges, valves, and pumps used to  
13 distribute, meter, or control the flow of regulated substances  
14 to or from an underground storage tank.

15       Subp. 5. **Belowground release.** "Belowground release" means  
16 a release to the subsurface of the land and to groundwater,  
17 including, but not limited to, releases from the belowground  
18 parts of an underground storage tank system and belowground  
19 releases associated with overfills and transfer operations as  
20 the regulated substance moves to or from an underground storage  
21 tank.

22       Subp. 6. **Beneath the surface of the ground.** "Beneath the  
23 surface of the ground" means beneath the ground surface or  
24 otherwise covered with earthen materials.

25       Subp. 7. **Cathodic protection.** "Cathodic protection" means  
26 using a technique to prevent corrosion of a metal surface by  
27 making that surface the cathode of an electrochemical cell. For  
28 example, a tank system can be cathodically protected through the  
29 application of either galvanic anodes or impressed current.

30       Subp. 8. **Cathodic protection tester.** "Cathodic protection  
31 tester" means a person who can demonstrate an understanding of  
32 the principles and measurements of all common types of cathodic  
33 protection systems as applied to buried or submerged metal  
34 piping and tank systems. At a minimum, such persons must have  
35 education and experience in soil resistivity, stray current,  
36 structure-to-soil potential, and component electrical isolation

1 measurements of buried metal piping and tank systems.

2 Subp. 9. **Change in service.** "Change in service" means a  
3 permanent removal from service or a change in the reported uses,  
4 contents, or ownership of an underground storage tank under  
5 Minnesota Statutes, section 116.48, subdivision 3, or ~~a repair~~  
6 an upgrade under this chapter.

7 Subp. 10. **Closure or removal.** "Closure" or "removal"  
8 means permanently taking an underground storage tank out of  
9 service by either closing it in place, removing it from the  
10 ground, or converting it to store a nonregulated substance as  
11 required by this chapter.

12 Subp. 11. **Commissioner.** "Commissioner" means the  
13 commissioner of the Minnesota Pollution Control Agency.

14 Subp. 12. **Compatible.** "Compatible" means the ability of  
15 two or more substances to maintain their respective physical and  
16 chemical properties upon contact with one another for the design  
17 life of the tank system under conditions likely to be  
18 encountered in the underground storage tank.

19 Subp. 13. **Connected piping.** "Connected piping" means  
20 underground piping including valves, elbows, joints, flanges,  
21 and flexible connectors attached to a tank system through which  
22 regulated substances flow. For the purpose of determining how  
23 much piping is connected to an individual underground storage  
24 tank system, the piping that joins two underground storage tank  
25 systems should be allocated equally between them.

26 Subp. 14. **Consumptive use.** "Consumptive use," with  
27 respect to heating oil, means consumed on the premises.

28 Subp. 15. **Corrosion expert.** "Corrosion expert" means a  
29 person who, by reason of thorough knowledge of the physical  
30 sciences and the principles of engineering and mathematics  
31 acquired by a professional education and related practical  
32 experience, is qualified to engage in the practice of corrosion  
33 control on buried or submerged metal piping systems and metal  
34 tanks. The person must be accredited or certified as being  
35 qualified by the National Association of Corrosion Engineers or  
36 be a registered professional engineer who has certification or

1 licensing that includes education and experience in corrosion  
2 control of buried or submerged metal piping systems and metal  
3 tanks.

4       Subp. 16. **Dielectric material.** "Dielectric material"  
5 means a material that does not conduct direct electrical  
6 current. Dielectric coatings are used to electrically isolate  
7 underground storage tank systems from the surrounding soils.  
8 Dielectric bushings are used to electrically isolate parts of  
9 the underground storage tank system, for example, tank from  
10 piping.

11       Subp. 17. **Electrical equipment.** "Electrical equipment"  
12 means underground equipment that contains dielectric fluid that  
13 is necessary for the operation of equipment such as transformers  
14 and buried electrical cable.

15       Subp. 18. **Excavation zone.** "Excavation zone" means the  
16 volume containing the tank system and backfill material bounded  
17 by the ground surface, walls, and floor of the pit and trenches  
18 into which the underground storage tank system is placed at the  
19 time of installation.

20       Subp. 19. **Existing tank system.** "Existing tank system"  
21 means a tank system used to contain an accumulation of regulated  
22 substances or for which installation began on or before December  
23 22, 1988. However, a tank system containing hazardous materials  
24 that is not regulated under Code of Federal Regulations, title  
25 40, part 280, is considered an existing tank system if  
26 installation began on or before (insert 90 days after date of  
27 adoption). Installation is considered to have begun if:

28           A. the owner or operator has obtained all federal,  
29 state, and local approvals or permits necessary to begin  
30 physical construction of the site or installation of the tank  
31 system; and

32           B. either a continuous on-site physical construction  
33 or installation program has begun, or the owner or operator has  
34 entered into contractual obligations, that cannot be canceled or  
35 modified without substantial loss, for physical construction at  
36 the site or installation of the tank system to be completed

1 within a reasonable time.

2 Subp. 20. **Farm tank.** "Farm tank" means a tank located on  
3 a tract of land devoted to the production of crops, raising  
4 animals, including fish, range land, nurseries with growing  
5 operations, and associated residences and improvements. A farm  
6 tank must be located on the farm property.

7 Subp. 21. **Flow-through process tank.** "Flow-through  
8 process tank" means a tank that forms an integral part of a  
9 production process through which there is a steady, variable,  
10 recurring, or intermittent flow of materials during the  
11 operation of the process. Flow-through process tanks do not  
12 include tanks used for the storage of materials prior to their  
13 introduction into the production process or for the storage of  
14 finished products or by-products from the production process.

15 Subp. 22. **Free product.** "Free product" means a regulated  
16 substance that is present as a nonaqueous phase liquid, for  
17 example, liquid not dissolved in water.

18 Subp. 23. **Gathering lines.** "Gathering lines" means a  
19 pipeline, equipment, facility, or building used in the  
20 transportation of oil or gas during oil or gas production or  
21 gathering operations.

22 Subp. 24. **Hazardous material.** "Hazardous material" means:

23 A. a substance listed in Code of Federal Regulations,  
24 title 49, section 172.101, including petroleum under subpart 38,  
25 item C, but not including:

26 (1) a hazardous waste listed or identified under  
27 chapter 7045 or Code of Federal Regulations, title 40, part 261,  
28 and-not-including;

29 (2) petroleum under subpart 38, item A, B, or D;  
30 or

31 (3) a substance that is not liquid at a  
32 temperature of 60 degrees Fahrenheit and pressure of 14.7 pounds  
33 per square inch absolute; or

34 B. any mixture of substances identified in item A and  
35 petroleum, unless the amount of the substance identified in item  
36 A is de minimus.

1 Subp. 25. **Hazardous material underground storage tank**  
2 **system.** "Hazardous material underground storage tank system"  
3 means an underground storage tank system that is used to contain  
4 a hazardous material.

5 Subp. 26. **Heating oil.** "Heating oil" means petroleum that  
6 is Nos. 1, 2, and 4 light, No. 4 heavy, No. 5 light, No. 5  
7 heavy, and No. 6 technical grades of fuel oil; other residual  
8 fuel oils, including Navy Special Fuel Oil and Bunker C; and  
9 other fuels when used as substitutes for one of these fuel oils.  
10 Heating oil is typically used in the operation of heating  
11 equipment, boilers, or furnaces.

12 Subp. 27. **Hydraulic lift tank.** "Hydraulic lift tank"  
13 means a tank holding hydraulic fluid for a closed-loop  
14 mechanical system that uses compressed air or hydraulic fluid to  
15 operate lifts, elevators, and other similar devices.

16 Subp. 28. **Maintenance.** "Maintenance" means the normal  
17 operational upkeep to prevent an underground storage tank system  
18 from releasing ~~product~~ a regulated substance.

19 Subp. 29. **Motor fuel.** "Motor fuel" means petroleum or a  
20 petroleum-based substance that is motor gasoline, aviation  
21 gasoline, No. 1 or 2 diesel fuel, or any grade of gasohol, and  
22 is typically used in the operation of a motor engine.

23 Subp. 30. **New tank system.** "New tank system" means a tank  
24 system that is or will be used to contain an accumulation of  
25 regulated substances and which is not an existing tank system as  
26 defined in subpart 19.

27 Subp. 31. **Noncommercial purposes.** "Noncommercial  
28 purposes," with respect to motor fuel, means not for resale.

29 Subp. 32. **On the premises where stored.** "On the premises  
30 where stored," with respect to heating oil, means underground  
31 storage tank systems located on the same property where the  
32 stored heating oil is used.

33 Subp. 33. **Operational life.** "Operational life" means the  
34 period beginning when installation of the tank system has begun  
35 until the time the tank system is properly closed under parts  
36 ~~7150-0600~~ 7150.0400 to ~~7150-0640~~ 7150.0440.



1       Subp. 34. **Operator.** "Operator" means a person in control  
2 of or having responsibility for the daily operation of the  
3 underground storage tank system or a person who was in control  
4 of or had responsibility for the daily operation of the tank  
5 immediately before discontinuation of its use.

6       ~~As used in parts 7150.0400 to 7150.0570,~~ "Operator" also  
7 means a person who is responsible under Minnesota Statutes,  
8 section 115C.021, for a release from an underground storage tank  
9 containing petroleum, or a person who is responsible under  
10 Minnesota Statutes, section 115B.03, for a release from an  
11 underground storage tank containing a hazardous material.  
12 "Operator" does not include a person who operates a tank if the  
13 tank is not regulated by this chapter.

14       Subp. 35. **Overfill release.** "Overfill release" means a  
15 release occurring when a tank is filled beyond its capacity,  
16 resulting in a discharge of the regulated substance to the  
17 environment.

18       Subp. 36. **Owner.** "Owner" means a person who holds title  
19 to, controls or possesses an interest in an underground storage  
20 tank, and a person who held title to, controlled, or possessed  
21 an interest in the tank immediately before discontinuation of  
22 its use.

23       ~~As used in parts 7150.0400 to 7150.0570,~~ "Owner" also means  
24 a person who is responsible under Minnesota Statutes, section  
25 115C.021, for a release from an underground storage tank  
26 containing petroleum, or a person who is responsible under  
27 Minnesota Statutes, section 115B.03, for a release from an  
28 underground storage tank containing a hazardous material.

29       "Owner" does not include a person who owns a tank if the  
30 tank is not regulated by this chapter and does not include a  
31 person who holds an interest in a tank solely for financial  
32 security, unless through foreclosure or other related actions  
33 the holder of a security interest has taken possession of the  
34 tank.

35       Subp. 37. **Person.** "Person" means an individual,  
36 partnership, association, public or private corporation, or

1 other legal entity, including the United States government, an  
2 interstate commission or other body, the state, or any agency,  
3 board, bureau, office, department, or political subdivision of  
4 the state, but does not include the Minnesota Pollution Control  
5 Agency.

6 Subp. 38. **Petroleum.** "Petroleum" means one of the  
7 following substances:

8 A. gasoline and fuel oil as defined in Minnesota  
9 Statutes, section 296.01, subdivisions 3 and 4;

10 B. crude oil or a fraction of crude oil that is  
11 liquid at a temperature of 60 degrees Fahrenheit and pressure of  
12 14.7 pounds per square inch absolute;

13 C. constituents of gasoline and fuel oil under item A  
14 and constituents of crude oil under item B; or

15 D. petroleum-based substances that are comprised of a  
16 complex blend of hydrocarbons derived from crude oil through  
17 processes of separation, conversion, upgrading, and finishing,  
18 such as motor fuels, jet fuels, distillate fuel oils, residual  
19 fuel oils, lubricants, and used oils.

20 Subp. 39. **Petroleum underground storage tank system.**

21 "Petroleum underground storage tank system" means an underground  
22 storage tank system that is used to contain petroleum or a  
23 mixture of petroleum with de minimus quantities of hazardous  
24 materials.

25 Subp. 40. **Pipe or piping.** "Pipe" or "piping" means a  
26 hollow cylinder or tubular conduit ~~that-is-constructed-of~~  
27 nonearthen-materials for conveying a regulated substance from  
28 one point to another within an underground storage tank system.

29 Subp. 41. **Pipeline facilities.** "Pipeline facilities,"  
30 including gathering lines, means new and existing pipe  
31 rights-of-way and any associated equipment, facilities, or  
32 buildings.

33 Subp. 42. **Regulated substance.** "Regulated substance"  
34 means a hazardous material or petroleum.

35 Subp. 43. **Release.** "Release" means a spilling, leaking,  
36 emitting, discharging, escaping, leaching, or disposing from an

1 underground storage tank into the environment including spills  
2 associated with overfills and transfer operations as the  
3 regulated substance moves to or from an underground storage tank  
4 system. "Release" does not include discharges or designed  
5 venting allowed under agency rules.

6 Subp. 44. **Release detection.** "Release detection" means  
7 determining whether a release of a regulated substance has  
8 occurred from the underground storage tank system into the  
9 environment or into the interstitial space between the  
10 underground storage tank system and its secondary barrier or  
11 secondary containment around it.

12 Subp. 45. **Repair.** "Repair" means the correction,  
13 restoration, modification, or upgrading of a tank system,  
14 including, but not limited to, the addition of cathodic  
15 protection systems, the replacement of piping, valves, fill  
16 pipes or vents, the lining of a tank through the application of  
17 materials such as epoxy resins, or any other similar activities  
18 that may affect the integrity of the tank system.

19 Subp. 46. **Residential tank.** "Residential tank" means a  
20 tank located on property used primarily for dwelling purposes.

21 Subp. 47. **Septic tank.** "Septic tank" means a watertight,  
22 covered receptacle designed to receive or process through liquid  
23 separation or biological digestion, the sewage discharged from a  
24 building sewer. The effluent from the receptacle is distributed  
25 for disposal through the soil and settled solids and scum from  
26 the tank are pumped out periodically and hauled to a treatment  
27 facility.

28 Subp. 48. **Storm water or wastewater collection system.**  
29 "Storm water or wastewater collection system" means piping,  
30 pumps, conduits, and any other equipment necessary to collect  
31 and transport the flow of surface water run-off resulting from  
32 precipitation, or domestic, commercial, or industrial wastewater  
33 to and from retention areas or areas where treatment is  
34 designated to occur. The collection of storm water and  
35 wastewater does not include treatment, except where incidental  
36 to conveyance.

1           Subp. 49. **Surface impoundment.** "Surface impoundment"  
2 means a natural topographic depression, man-made excavation, or  
3 diked area formed primarily of earthen materials, although it  
4 may be lined with man-made materials, that is not an injection  
5 well.

6           Subp. 50. **Tank.** "Tank" is a stationary device designed to  
7 contain an accumulation of regulated substances and constructed  
8 of nonearthen materials, such as concrete, steel, and plastic,  
9 that provide structural support.

10          Subp. 51. **Tank system.** "Tank system" has the same meaning  
11 as underground storage tank and underground storage tank system.

12          Subp. 52. **Underground area.** "Underground area" means an  
13 underground room such as a basement, cellar, shaft, or vault  
14 providing enough space for physical inspection of the exterior  
15 of the tank situated on or above the surface of the floor.

16          Subp. 53. **Underground release.** "Underground release"  
17 means a belowground release.

18          Subp. 54. **Underground storage tank or underground storage  
19 tank system.** "Underground storage tank" or "underground storage  
20 tank system" means any one or combination of containers  
21 including tanks, vessels, enclosures, or structures and  
22 underground appurtenances connected to them that is used to  
23 contain or dispense an accumulation of regulated substances, and  
24 the volume of which, including the volume of underground pipes  
25 connected to them, is ten percent or more beneath the surface of  
26 the ground. This term does not include any tank or pipes  
27 connected to a tank described in part 7150.0010, subpart 2.

28          Subp. 55. **Upgrade.** "Upgrade" means the addition or  
29 retrofit of systems such as cathodic protection, lining, pipings,  
30 or spill and overflow controls to improve the ability of an  
31 underground storage tank system to prevent the release of  
32 product.

33          Subp. 56. **Wastewater treatment tank.** "Wastewater  
34 treatment tank" means a tank that is designed to receive and  
35 treat an influent wastewater through physical, chemical, or  
36 biological methods.

1 UNDERGROUND STORAGE TANK SYSTEMS  
2 DESIGN, CONSTRUCTION, INSTALLATION, AND NOTIFICATION  
3 7150.0100 PERFORMANCE STANDARDS FOR NEW UNDERGROUND STORAGE TANK  
4 SYSTEMS.

5 Subpart 1. **Purpose.** To prevent releases due to structural  
6 failure, corrosion, or spills and overfills for as long as the  
7 underground storage tank system is used to store regulated  
8 substances, all owners and operators of new underground storage  
9 tank systems must meet the requirements in subparts 2 to 8.

10 Subp. 2. **Tanks.** Each tank must be properly designed and  
11 constructed, and any part underground that routinely contains  
12 product must be protected from corrosion using one of the  
13 methods specified in items A to E. The corrosion protection  
14 methods in items A to D must be in accordance with one of the  
15 codes of practice in subpart 3 developed by a nationally  
16 recognized association or independent testing laboratory:

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

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

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

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

25 (3) impressed current systems are designed to  
26 allow determination of current operating status as required in  
27 part 7150.0210, subpart 4; and

28 (4) cathodic protection systems are operated and  
29 maintained according to part 7150.0210.

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

32 D. The tank is constructed of metal without  
33 additional corrosion protection measures provided that:

34 (1) the tank is installed at a site that is  
35 determined by a corrosion expert not to be corrosive enough to

1 cause it to have a release due to corrosion during its operating  
2 life; and

3 (2) owners and operators maintain records that  
4 demonstrate compliance with the requirements of subitem (1) for  
5 the remaining life of the tank.

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

13 Subp. 3. **Codes of practice for tanks.** Codes of practice  
14 for subpart 2 are described in items A to C.

15 A. The following codes of practice apply to subpart  
16 2, item A:

17 (1) Underwriters Laboratories UL 1316,  
18 ~~Glass-Fibre~~Fiber-Reinforced Plastic Underground Storage Tanks  
19 for Petroleum Products;

20 (2) Underwriters Laboratories of Canada  
21 CAN4-S615-M83, Standard for Reinforced Plastic Underground Tanks  
22 for Petroleum Products; or

23 (3) American Society of Testing and Materials  
24 D4021-86, Standard Specification for Glass-Fiber-Reinforced  
25 Polyester Underground Petroleum Storage Tanks.

26 B. The following codes of practice apply to subpart  
27 2, item B:

28 (1) Steel Tank Institute Specifications for  
29 STI-P3 System of External Corrosion Protection of Underground  
30 Steel Storage Tanks;

31 (2) Underwriters Laboratories UL 1746, Corrosion  
32 Protection Systems for Underground Storage Tanks;

33 (3) Underwriters Laboratories of Canada  
34 CAN4-S603.1-M85, Standard for Galvanic Corrosion Protection  
35 Systems for Steel Underground Tanks for Flammable and  
36 Combustible Liquids;

1 (4) Underwriters Laboratories of Canada  
2 CAN4-S603-M85, Standard for Steel Underground Tanks for  
3 Flammable and Combustible Liquids;

4 (5) Underwriters Laboratories of Canada  
5 CAN4-S631-M84, Standard for Isolating Bushings for Steel  
6 Underground Tanks Protected with Coatings and Galvanic Systems;

7 (6) National Association of Corrosion Engineers  
8 RP-02-85, Control of External Corrosion on Metallic Buried,  
9 Partially Buried, or Submerged Liquid Storage Systems; or

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

12 C. The following codes of practice apply to subpart  
13 2, item C:

14 (1) Underwriters Laboratories UL 1746, Corrosion  
15 Protection Systems for Underground Storage Tanks;

16 (2) Association of Composite Tanks ACT-100,  
17 Specification for the Fabrication of FRP Clad Underground  
18 Storage Tanks; or

19 (3) Steel Tank Institute STI F894-89,  
20 Specification for External Corrosion Protection of FRP Composite  
21 Steel Underground Storage Tanks.

22 Subp. 4. Piping. The piping that routinely contains  
23 regulated substances and is in contact with the ground must be  
24 properly designed, constructed, and protected from corrosion  
25 using one of the methods specified in items A to D. The  
26 corrosion protection methods in items A to C must be in  
27 accordance with one of the codes of practice in subpart 5  
28 developed by a nationally recognized association or independent  
29 testing laboratory:

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

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

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

36 (2) field-installed cathodic protection systems

1 are designed by a corrosion expert;

2 (3) impressed current systems are designed to  
3 allow determination of current operating status as required in  
4 part 7150.0210, subpart 4; and

5 (4) cathodic protection systems are operated and  
6 maintained according to part 7150.0210.

7 C. The piping is constructed of metal without  
8 additional corrosion protection measures, provided that:

9 (1) the piping is installed at a site that is  
10 determined by a corrosion expert to not be corrosive enough to  
11 cause it to have a release due to corrosion during its operating  
12 life; and

13 (2) owners and operators maintain records that  
14 demonstrate compliance with subitem (1) for the remaining life  
15 of the piping.

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

24 Subp. 5. **Codes of practice for piping.** Codes of practice  
25 for subpart 4 are described in items A to C.

26 A. The following codes of practice apply to subpart  
27 4, item A:

28 (1) Underwriters Laboratories UL 567, Pipe  
29 Connectors for Flammable and Combustible Liquids and LP-Gas;

30 ~~(2) Underwriters Laboratories UL-9717-UL-Listed~~  
31 ~~Non-Metal-Pipe;~~

32 ~~(3) Underwriters Laboratories of Canada~~  
33 ~~CAN4-S633-M84, Flexible Underground Hose Connectors for~~  
34 ~~Flammable and Combustible Liquids; or~~

35 ~~(4) (3) Underwriters Laboratories of Canada ULC~~  
36 ~~Subject C107C-M1984, Guide for Glass Fibre Reinforced Plastic~~



1 Pipe and Fittings for Flammable Liquids.

2 B. The following codes of practice apply to subpart  
3 4, item B:

4 (1) National Fire Protection Association 30,  
5 Flammable and Combustible Liquids Code;

6 (2) American Petroleum Institute 1615,  
7 Installation of Underground Petroleum Storage Systems;

8 (3) American Petroleum Institute 1632, Cathodic  
9 Protection of Underground Petroleum Storage Tanks and Piping  
10 Systems; or

11 (4) National Association of Corrosion Engineers  
12 RP-01-69, Control of External Corrosion on Underground or  
13 Submerged Metallic Piping Systems.

14 C. The following codes of practice apply to subpart  
15 4, item C:

16 (1) National Fire Protection Association 30,  
17 Flammable and Combustible Liquids Code; or

18 (2) National Association of Corrosion Engineers  
19 RP-01-69, Control of External Corrosion on Underground or  
20 Submerged Metallic Piping Systems.

21 Subp. 6. **Spill and overfill prevention equipment.**

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

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

30 (2) overfill prevention equipment that will:

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

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

36 B. Owners and operators are not required to use the

1 spill and overflow prevention equipment specified in item A if:

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

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

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

11 Subp. 7. **Installation.** All tanks and piping must be  
12 properly installed according to the manufacturer's instructions  
13 and one of the following codes of practice developed by a  
14 nationally recognized association or independent testing  
15 laboratory:

16 A. American Petroleum Institute 1615, Installation of  
17 Underground Petroleum Storage Systems;

18 B. Petroleum Equipment Institute RP 100, Recommended  
19 Practices for Installation of Underground Liquid Storage  
20 Systems;

21 C. American National Standards Institute B31.3,  
22 Chemical Plant and Petroleum Refinery Piping; or

23 D. American National Standards Institute B31.4,  
24 Liquid Transportation Systems for Hydrocarbons, Liquid Petroleum  
25 Gas, Anhydrous Ammonia and Alcohols.

26 Subp. 8. **Certification of installation.** Owners and  
27 operators must demonstrate compliance with subpart 7 by  
28 certifying on the underground storage tank notification form  
29 required in part 7150.0120 that:

30 A. the installer is in compliance with certification  
31 requirements imposed by the agency under chapter 7105; and

32 B. all work listed in the manufacturer's installation  
33 checklists has been completed.

34 7150.0110 UPGRADING OF EXISTING UNDERGROUND STORAGE TANK SYSTEMS.

35 Subpart 1. **Alternatives allowed.** Not later than December

1 22, 1998, all existing underground storage tank systems must  
2 comply with one of the following requirements:

3 A. new underground storage tank system performance  
4 standards under part 7150.0100;

5 B. the upgrading requirements in subparts 2 to 4; or

6 C. closure requirements under parts ~~7150.0600~~  
7 7150.0400 to ~~7150.0640~~ 7150.0440, including applicable  
8 requirements for corrective action under ~~parts-7150.0500-to~~  
9 ~~7150.0570~~ Minnesota Statutes, section 115.061.

10 Subp. 2. **Tank upgrading requirements.** Steel tanks must be  
11 protected from corrosion using the corrosion protection methods  
12 in items A to C.

13 A. A tank may be upgraded by internal lining if:

14 (1) the lining is installed according to the  
15 requirements of part 7150.0230; and

16 (2) within ten years after lining, and every five  
17 years after that, the lined tank is internally inspected and  
18 found to be structurally sound with the lining still performing  
19 according to original design specifications.

20 B. A tank may be upgraded by cathodic protection if  
21 the cathodic protection system meets the requirements of part  
22 7150.0100, subpart 2, item B, subitems (2) to (4), and the  
23 integrity of the tank is ensured using one of the methods in  
24 subitems (1) to (4).

25 (1) The tank is internally inspected and assessed  
26 to ensure that the tank is structurally sound and free of  
27 corrosion holes prior to installing the cathodic protection  
28 system.

29 (2) The tank has been installed for less than ten  
30 years and is monitored monthly for releases according to part  
31 7150.0330, items E to I.

32 (3) The tank has been installed for less than ten  
33 years and is assessed for corrosion holes by conducting two  
34 tightness tests that meet the requirements of part 7150.0330,  
35 item D. The first tightness test must be conducted before  
36 installing the cathodic protection system. The second tightness

1 test must be conducted between three and six months following  
2 the first operation of the cathodic protection system.

3 (4) The tank is assessed for corrosion holes by a  
4 method that is determined by the commissioner to prevent  
5 releases in a manner that is no less protective of human health  
6 and the environment than subitems (1) to (3).

7 C. A tank may be upgraded by both internal lining and  
8 cathodic protection if:

9 (1) the lining is installed according to part  
10 7150.0230; and

11 (2) the cathodic protection system meets the  
12 requirements of part 7150.0100, subpart 2, item B, subitems (2)  
13 to (4).

14 D. The corrosion protection methods in items A to C  
15 must be in accordance with one or more of the following codes of  
16 practice developed by a nationally recognized association or  
17 independent testing laboratory:

18 (1) American Petroleum Institute 1631, Interior  
19 Lining of Underground Storage Tanks;

20 (2) National Leak Prevention Association 631,  
21 Spill Prevention, Minimum 10-Year Life Extension of Existing  
22 Steel Underground Tanks by Lining Without the Addition of  
23 Cathodic Protection;

24 (3) National Association of Corrosion Engineers  
25 RP-02-85, Control of External Corrosion on Metallic Buried,  
26 Partially Buried, or Submerged Liquid Storage Systems; or

27 (4) American Petroleum Institute 1632, Cathodic  
28 Protection of Underground Petroleum Storage Tanks and Piping  
29 Systems.

30 Subp. 3. **Piping upgrading requirements.** Metal piping that  
31 routinely contains regulated substances and is in contact with  
32 the ground must meet the requirements of part 7150.0100, subpart  
33 4, item B, subitems (2) to (4).

34 Subp. 4. **Spill and overfill prevention equipment.** To  
35 prevent spilling and overfilling associated with product  
36 transfer to the underground storage tank system, all existing

1 underground storage tank systems must comply with new  
2 underground storage tank system spill and overflow prevention  
3 equipment requirements in part 7150.0100, subpart 6.

4 7150.0120 NOTIFICATION REQUIREMENTS.

5 Subpart 1. **Notice of underground storage tank system**  
6 **installation.** At least 30 days before beginning installation of  
7 an underground storage tank system under part 7150.0100, owners  
8 and operators must notify the commissioner of their intent to  
9 install the underground storage tank system.

10 Subp. 2. **Notification of new tanks and changes in**  
11 **service.** An owner who brings an underground storage tank system  
12 into use or makes a change in service to an existing tank system  
13 after June 1, 1986, must, within 30 days of bringing such tank  
14 into use or making a change in service, submit to the agency, in  
15 the form prescribed by the commissioner, a notice of the  
16 existence of such tank system or type of change in service,  
17 including the information required by Minnesota Statutes,  
18 section 116.48, subdivisions 1 and 3.

19 Subp. 3. **Owner and operator tank system certification.**  
20 Owners and operators of new underground storage tank systems  
21 must certify in the notification form compliance with the  
22 following requirements:

23 A. installation of tanks and piping under part  
24 7150.0100, subpart 8;

25 B. cathodic protection of steel tanks and piping  
26 under part 7150.0100, subparts 2 and 4;

27 C. financial responsibility under Code of Federal  
28 Regulations, title 40, part 280, subpart H; and

29 D. release detection under parts 7150.0310 and  
30 7150.0320.

31 Subp. 4. **Installer tank system certification.** Owners and  
32 operators of new underground storage tank systems must ensure  
33 that the installer certifies in the notification form that the  
34 methods used to install the tanks and piping comply with part  
35 7150.0100, subpart 7, and that the installer is in compliance

1 with certification requirements imposed by chapter 7105.

2 Subp. 5. **Repairer tank system certification.** Owners and  
3 operators of underground storage tank systems must ensure that  
4 the repairer certifies in the notification form that the methods  
5 used to repair the tanks and piping comply with parts 7150.0110  
6 and 7150.0230 and that the repairer is in compliance with  
7 certification requirements imposed by chapter 7105.

8 Subp. 6. **Tank seller notification.** A person who sells a  
9 tank intended to be used as an underground storage tank or  
10 property that the seller knows contains an underground storage  
11 tank must notify the purchaser of the tank in writing of the  
12 owner's notification obligations under subpart 1 and under  
13 Minnesota Statutes, section 116.48.

14 GENERAL OPERATING REQUIREMENTS

15 7150.0200 SPILL AND OVERFILL CONTROL.

16 Subpart 1. **Spill and overflow release prevention.** Owners  
17 and operators must ensure that releases due to spilling or  
18 overflowing do not occur. The owner or operator must ensure  
19 that the volume available in the tank is greater than the volume  
20 of product to be transferred to the tank before the transfer is  
21 made and that the transfer operation is monitored constantly to  
22 prevent overflowing and spilling. One of the following codes of  
23 practice developed by a nationally recognized association or  
24 independent testing laboratory must be used to comply with this  
25 subpart:

26 A. National Fire Protection Association 30, Flammable  
27 and Combustible Liquids Code;

28 B. National Fire Protection Association 385, Standard  
29 for Tank Vehicles for Flammable and Combustible Liquids; or

30 C. American Petroleum Institute 1621, Bulk Liquid  
31 Stock Control at Retail Outlets.

32 Subp. 2. **Reporting and cleanup.** The owner and operator  
33 must report, investigate, and cleanup any spills and overfills  
34 according to ~~part-7150-0430~~ Minnesota Statutes, section 115.061.

35 7150.0210 OPERATION AND MAINTENANCE OF CORROSION PROTECTION.

1           Subpart 1. **Owner and operator compliance.** Owners and  
2 operators of ~~steel~~ underground storage tank systems with  
3 corrosion protection must comply with the requirements in  
4 subparts 2 to 5 to ensure that releases due to corrosion are  
5 prevented for as long as the underground storage tank system is  
6 used to store regulated substances, or is temporarily closed in  
7 accordance with part ~~7160.0600~~ 7150.0400.

8           Subp. 2. **Corrosion protection system maintenance.** All  
9 corrosion protection systems must be operated and maintained to  
10 continuously provide corrosion protection to the metal  
11 components of the part of the tank and piping that routinely  
12 contains regulated substances and is in contact with the ground.

13           Subp. 3. **Cathodic protection system maintenance.** All  
14 underground storage tank systems equipped with cathodic  
15 protection systems must be inspected for proper operation by a  
16 qualified cathodic protection tester according to the following  
17 requirements:

18           A. all cathodic protection systems must be tested  
19 within six months of installation and at least every three years  
20 after that; and

21           B. the criteria that are used to determine that  
22 cathodic protection is adequate as required by this subpart must  
23 be according to the code of practice in National Association of  
24 Corrosion Engineers RP-02-85, Control of External Corrosion on  
25 Metallic Buried, Partially Buried, or Submerged Liquid Storage  
26 Systems.

27           Subp. 4. **Impressed current system maintenance.**  
28 Underground storage tank systems with impressed current cathodic  
29 protection systems must also be inspected every 60 days to  
30 ensure the equipment is running properly.

31           Subp. 5. **Recordkeeping.** For underground storage tank  
32 systems using cathodic protection, records of the operation of  
33 the cathodic protection must be maintained according to part  
34 7150.0240 to demonstrate compliance with the performance  
35 standards in this part. These records must provide:

36           A. the results of the last three inspections required

1 in subpart 4; and

2 B. the results of testing from the last two  
3 inspections required in subpart 3.

4 7150.0220 COMPATIBILITY.

5 Owners and operators must use an underground storage tank  
6 system made of or lined with materials that are compatible with  
7 the substance stored in the underground storage tank system.  
8 Owners and operators storing alcohol blends may use the  
9 following guidance to comply with the requirements of this part:

10 A. American Petroleum Institute 1626, Storing and  
11 Handling Ethanol and Gasoline-Ethanol Blends at Distribution  
12 Terminals and Service Stations; or

13 B. American Petroleum Institute 1627, Storing and  
14 Handling of Gasoline-Methanol/Cosolvent Blends at Distribution  
15 Terminals and Service Stations.

16 7150.0230 REPAIRS ALLOWED.

17 Owners and operators of underground storage tank systems  
18 must ensure that repairs will prevent releases due to structural  
19 failure or corrosion as long as the underground storage tank  
20 system is used to store regulated substances. The owner and  
21 operator of the tank shall ensure that the person performing the  
22 repairs has been certified under chapter 7105. The repairs must  
23 meet the requirements in items A to F:

24 A. Repairs to underground storage tank systems must  
25 be properly conducted according to one of the following codes of  
26 practice developed by a nationally recognized association or  
27 independent testing laboratory:

28 (1) National Fire Protection Association 30,  
29 Flammable and Combustible Liquids Code;

30 (2) American Petroleum Institute 2200, Repairing  
31 Crude Oil, Liquefied Petroleum Gas and Product Pipelines;

32 (3) American Petroleum Institute 1631, Interior  
33 Lining of Underground Storage Tanks; or

34 (4) National Leak Prevention Association 631,  
35 Spill Prevention, Minimum 10-Year Life Extension of Existing



1 Steel Underground Tanks by Lining Without the Addition of  
2 Cathodic Protection.

3 B. Repairs to fiberglass-reinforced plastic tanks  
4 must be made according to the codes of practice required in item  
5 A.

6 C. Metal pipe sections and fittings that have  
7 released product as a result of corrosion or other damage must  
8 be replaced. Fiberglass pipes and fittings must be repaired in  
9 accordance with the manufacturer's specifications.

10 D. Repaired tanks and piping must be tightness tested  
11 according to parts 7150.0330, item D; and 7150.0340, item B,  
12 within 30 days after the date of the completion of the repair  
13 except as provided in subitems (1) to (3):

14 (1) the repaired tank is internally inspected  
15 according to the codes of practice required in item A;

16 (2) the repaired part of the underground storage  
17 tank system is monitored monthly for releases according to a  
18 method specified in part 7150.0330, items E to I; or

19 (3) another test method is used that is  
20 determined by the commissioner to be no less protective of human  
21 health and the environment than the tests in subitems (1) and  
22 (2).

23 E. Within six months after the repair of a  
24 cathodically protected underground storage tank system, the  
25 cathodic protection system must be tested according to part  
26 7150.0210, subparts 3 and 4, to ensure that it is operating  
27 properly.

28 F. Owners and operators must maintain records of each  
29 repair, and of a commissioner's determination under item D,  
30 subitem (3), for the remaining operating life of the underground  
31 storage tank system that demonstrate compliance with the  
32 requirements of this part.

33 7150.0240 REPORTING AND RECORDKEEPING.

34 Owners and operators of underground storage tank systems  
35 must cooperate fully with inspections, monitoring, and testing

1 conducted by the agency, as well as requests for document  
2 submission, testing, and monitoring by the owner or operator  
3 under United States Code, title 42, section 6991d.

4 A. Owners and operators must submit the following  
5 information to the commissioner:

6 (1) notification of all underground storage tank  
7 systems under part 7150.0120, including certification of  
8 installation for new underground storage tank systems under part  
9 7150.0100, subpart 8;

10 (2) notification of the discovery of an abandoned  
11 tank or of a change in the uses, contents, or ownership of a  
12 tank under Minnesota Statutes, section 116.48, subdivisions 2  
13 and 3;

14 (3) reports of all releases under Minnesota  
15 Statutes, section 115.061, including suspected releases under  
16 part-7150-0400, spills and overfills under-part-7150-0430, and  
17 confirmed releases under-part-7150-0510;

18 (4) corrective actions planned or taken under  
19 Minnesota Statutes, section 115.061, including which may include  
20 but are not limited to initial abatement measures under-part  
21 7150-0520, free product removal under-part-7150-0530, initial  
22 site characterization under-part-7150-0540, investigation of  
23 soil and groundwater cleanup under-part-7150-0550, and  
24 corrective action plan-under-part-7150-0560 plans; and

25 (5) a notification before permanent closure or  
26 change in service under part ~~7150-0610~~ 7150.0410.

27 B. Owners and operators must maintain the following  
28 information:

29 (1) a corrosion expert's analysis of site  
30 corrosion potential if corrosion protection equipment is not  
31 used under part 7150.0100, subparts 2, item D, and 4, item C;

32 (2) the commissioner's determination that  
33 alternative corrosion protection or spill and overfill equipment  
34 means may be used under part 7150.0100, subpart 2, item E; 4,  
35 item D; or 6, item B;

36 (3) documentation of operation of corrosion

1 protection equipment under part 7150.0210, subpart 5;

2 (4) documentation of underground storage tank  
3 system repairs under part 7150.0230, item F;

4 (5) documentation of compliance with release  
5 detection requirements under part 7150.0350; and

6 (6) results of the site investigation conducted  
7 at permanent closure under part ~~7150.0640~~ 7150.0440.

8 C. Owners and operators must keep the records  
9 required either:

10 (1) at the underground storage tank site where  
11 they are immediately available for inspection by the  
12 commissioner; or

13 (2) at a readily available alternative site where  
14 they can be provided for inspection to the commissioner upon  
15 request.

16 In the case of permanent closure records required under  
17 part ~~7150.0640~~ 7150.0440, owners and operators are also provided  
18 with the additional alternative of mailing closure records to  
19 the commissioner if they cannot be kept at the site or an  
20 alternative site as required in this item.

21 RELEASE DETECTION

22 7150.0300 GENERAL REQUIREMENTS FOR ALL UNDERGROUND STORAGE TANK  
23 SYSTEMS.

24 Subpart 1. **Methods.** Owners and operators of new and  
25 existing underground storage tank systems must provide a method,  
26 or combination of methods, of release detection that:

27 A. can detect a release from any part of the tank and  
28 the connected underground piping that routinely contains  
29 product;

30 B. is installed, calibrated, operated, and maintained  
31 according to the manufacturer's instructions, including routine  
32 maintenance and service checks for operability or running  
33 condition; and

34 C. meets the performance requirements in part  
35 7150.0330 or 7150.0340, with any performance claims and their

1 manner of determination described in writing by the equipment  
 2 manufacturer or installer. In addition, all methods must be  
 3 capable of detecting the leak rate or quantity specified for  
 4 that method in part 7150.0330, items B to E; or 7150.0340, items  
 5 A and B, with a probability of detection of 0.95 and a  
 6 probability of false alarm of 0.05.

7 Subp. 2. **Release notification.** When a release detection  
 8 method operated according to the performance standards in parts  
 9 7150.0330 and 7150.0340 indicates a release may have occurred,  
 10 owners and operators must notify the agency according to  
 11 Minnesota Statutes, section 115.0617, ~~and parts 7150.0400 to~~  
 12 ~~7150.0430.~~

13 Subp. 3. **Release detection schedule.** Owners and operators  
 14 of all underground storage tank systems must comply with the  
 15 release detection requirements of parts 7150.0300 to 7150.0350  
 16 by December 22 of the year listed in the following table.  
 17 Hazardous material tanks which are not regulated by Code of  
 18 Federal Regulations, title 40, part 280, must comply with these  
 19 requirements by the date indicated or by (insert date 180 days  
 20 after date of adoption), whichever is later:

21 Schedule for Phase-in of Release Detection

| 22 Year System Was           | 23 Year When Release Detection is Required (by |      |      |      |      |
|------------------------------|--|------|------|------|------|
| 24 Installed                 | 25 December 22 of the year indicated)          |      |      |      |      |
|                              | 1989   | 1990 | 1991 | 1992 | 1993 |
| 26 Before 1965 or            | RD   | P    |      |      |      |
| 27 date unknown              |  |      |      |      |      |
| 28 1965-1969                 |  | P/RD |      |      |      |
| 29 1970-1974                 |  | P    | RD   |      |      |
| 30 1975-1979                 |  | P    |      | RD   |      |
| 31 1980-1988                 |  | P    |      |      | RD   |
| 32                           |  |      |      |      |      |
| 33 New tanks                 | Immediately upon installation                  |      |      |      |      |
| 34 (after December 22, 1988) |  |      |      |      |      |

35  
 36 P=must begin release detection for all pressurized piping  
 37 according to part 7150.0310.

38 RD=must begin release detection for tanks and suction  
 39 piping according to parts 7150.0310, items A and B, subitem (2);  
 40 and 7150.0320.

41 Subp. 4. **Closure.** An Owners and operators of existing  
 42 underground storage tank system systems that cannot apply a  
 43 method of release detection that complies with the requirements

1 of parts 7150.0300 to 7150.0350 must complete the closure  
2 procedures in parts ~~7150.0600~~ 7150.0400 to ~~7150.0640~~ 7150.0440  
3 by the date on which release detection is required for the  
4 underground storage tank system under subpart 3.

5 7150.0310 REQUIREMENTS FOR PETROLEUM UNDERGROUND STORAGE TANK  
6 SYSTEMS.

7 Owners and operators of petroleum underground storage tank  
8 systems must provide release detection for tanks and piping as  
9 required in items A and B.

10 A. Tanks must be monitored at least every 30 days for  
11 releases using one of the methods in part 7150.0330, items E to  
12 I, except that:

13 (1) underground storage tank systems that meet  
14 the performance standards in part 7150.0100 or 7150.0110, and  
15 the monthly inventory control requirements in part 7150.0330,  
16 item A or B, may use tank tightness testing, conducted according  
17 to part 7150.0330, item D, at least every five years until  
18 December 22, 1998, or until ten years after the tank is  
19 installed or upgraded under part 7150.0110, item B, whichever is  
20 later;

21 (2) underground storage tank systems that do not  
22 meet the performance standards in part 7150.0100 or 7150.0110  
23 may use monthly inventory controls conducted according to part  
24 7150.0330, item A or B, and annual tank tightness testing  
25 conducted according to part 7150.0330, item D, until December  
26 22, 1998, when the tank must be upgraded under part 7150.0110 or  
27 permanently closed under part ~~7150.0610~~ 7150.0410; and

28 (3) tanks with capacities of 550 gallons or less  
29 may use weekly manual tank gauging conducted according to part  
30 7150.0330, item B, as the sole method of release detection.

31 B. Underground piping that routinely contains  
32 regulated substances must be monitored for releases in a manner  
33 that meets one of the requirements in subitem (1) or (2).

34 (1) Underground piping that conveys regulated  
35 substances under pressure must:

1 (a) be equipped with an automatic line leak  
2 detector conducted according to part 7150.0340, item A; and

3 (b) have an annual line tightness test  
4 conducted according to part 7150.0340, item B, or have monthly  
5 monitoring conducted according to part 7150.0340, item C.

6 (2) Underground piping that conveys regulated  
7 substances under suction must either have a line tightness test  
8 conducted at least every three years and according to part  
9 7150.0340, item B, or use a monthly monitoring method conducted  
10 according to part 7150.0340, item C. No release detection is  
11 required for suction piping that is designed and constructed to  
12 meet the following standards:

13 (a) the below-grade piping operates at less  
14 than atmospheric pressure;

15 (b) the below-grade piping is sloped so that  
16 the contents of the pipe will drain back into the storage tank  
17 if the suction is released;

18 (c) only one check valve is included in each  
19 suction line;

20 (d) the check valve is located directly  
21 below and as close as practical to the suction pump; and

22 (e) a method is provided that allows  
23 compliance with units (b) to (d) to be readily determined.

24 7150.0320 REQUIREMENTS FOR HAZARDOUS MATERIAL UNDERGROUND  
25 STORAGE TANK SYSTEMS.

26 Owners and operators of hazardous material underground  
27 storage tank systems must provide release detection that meets  
28 the requirements in items A and B.

29 A. Release detection at existing hazardous material  
30 underground storage tank systems must meet the requirements for  
31 petroleum underground storage tank systems in part 7150.0310 by  
32 the dates set forth in part 7150.0300. By December 22, 1998,  
33 all existing hazardous material underground storage tank systems  
34 must meet the release detection requirements for new systems in  
35 item B.

1 B. Release detection at new hazardous material  
2 underground storage tank systems must meet the requirements in  
3 subitems (1) to (5):

4 (1) Secondary containment systems must be  
5 designed, constructed, and installed to:

6 (a) contain regulated substances released  
7 from the tank system until they are detected and removed;

8 (b) prevent the release of regulated  
9 substances to the environment at any time during the operational  
10 life of the underground storage tank system; and

11 (c) be checked for evidence of a release at  
12 least every 30 days.

13 The provisions of part 7045.0528 may be used to comply with  
14 this subitem.

15 (2) Double-walled tanks must be designed,  
16 constructed, and installed to:

17 (a) contain a release from any part of the  
18 inner tank within the outer wall; and

19 (b) detect the failure of the inner wall.

20 (3) External liners, including vaults, must be  
21 designed, constructed, and installed to:

22 (a) contain 100 percent of the capacity of  
23 the largest tank within its boundary;

24 (b) prevent the interference of  
25 precipitation or groundwater intrusion with the ability to  
26 contain or detect a release of regulated substances; and

27 (c) surround the tank completely, for  
28 example, it is capable of preventing lateral as well as vertical  
29 migration of regulated substances.

30 (4) Underground piping must be equipped with  
31 secondary containment that satisfies the requirements of subitem  
32 (1), for example, trench liners and jacketing of double-walled  
33 pipe. In addition, underground piping that conveys regulated  
34 substances under pressure must be equipped with an automatic  
35 line leak detector according to part 7150.0340, item A.

36 (5) Other methods of release detection may be

1 used if owners and operators:

2 (a) demonstrate to the commissioner that an  
3 alternate method can detect a release of the stored substance as  
4 effectively as any of the methods allowed in part 7150.0330,  
5 items B to I, can detect a release of petroleum;

6 (b) provide information to the commissioner  
7 on effective corrective action technologies, health risks, and  
8 chemical and physical properties of the stored substance, and  
9 the characteristics of the underground storage tank site; and

10 (c) obtain approval from the commissioner to  
11 use the alternate release detection method before the  
12 installation and operation of the new underground storage tank  
13 system.

14 7150.0330 METHODS OF RELEASE DETECTION FOR TANKS.

15 Each method of release detection for tanks used to meet the  
16 requirements of part 7150.0310 must be conducted according to  
17 items A to I.

18 A. Product inventory control or another test of  
19 equivalent performance must be conducted monthly to detect a  
20 release of at least 1.0 percent flow-through plus 130 gallons on  
21 a monthly basis in the following manner:

22 (1) inventory volume measurements for regulated  
23 substance inputs, withdrawals, and the amount still remaining in  
24 the tank are recorded each operating day;

25 (2) the equipment used is capable of measuring  
26 the level of product over the full range of the tank's height to  
27 the nearest one-eighth of an inch;

28 (3) the regulated substance inputs are reconciled  
29 with delivery receipts by measurement of the tank inventory  
30 volume before and after delivery;

31 (4) deliveries are made through a drop tube that  
32 extends to within one foot of the tank bottom;

33 (5) product dispensing is metered and recorded  
34 within the local standards for meter calibration incorporated by  
35 reference at part 7600.6800; and



1 (6) the measurement of any water level in the  
2 bottom of the tank is made to the nearest one-eighth of an inch  
3 at least once a month.

4 Practices described in American Petroleum Institute 1621,  
5 Recommended Practice for Bulk Liquid Stock Control at Retail  
6 Outlets, may be used, where applicable, as guidance in meeting  
7 the requirements of this item.

8 B. Manual tank gauging may be used as described in  
9 this item to meet the requirements of part 7150.0310, item A.

10 (1) For tanks with capacities of 550 1,000  
11 gallons or less, weekly manual tank gauging may be used as the  
12 sole method of release detection.

13 (2) For tanks with capacities of 55± 1,001 to  
14 2,000 gallons, manual tank gauging may be used in place of  
15 product inventory control in item A.

16 For tanks not described in subitems (1) and (2), manual  
17 tank gauging may not be used to satisfy the provisions of parts  
18 7150.0310, item A.

19 C. Manual tank gauging must meet the following  
20 requirements:

21 (1) tank liquid level measurements are taken at  
22 the beginning and ending of a period of at least 36 hours during  
23 which no liquid is added to or removed from the tank;

24 (2) level measurements are based on an average of  
25 two consecutive stick readings at both the beginning and ending  
26 of the period; and

27 (3) the equipment used is capable of measuring  
28 the level of product over the full range of the tank's height to  
29 the nearest one-eighth of an inch.

30 A leak is suspected and subject to the requirements of  
31 ~~parts-7150-0400-to-7150-0430~~ Minnesota Statutes, section  
32 115.061, if the variation between beginning and ending  
33 measurements exceeds the weekly or monthly standards in the  
34 following table:

| <u>Nominal Tank-Capacity</u> | <u>Weekly-Standard</u><br><u>--(one-test)</u> | <u>Monthly-Standard</u><br><u>(average-of-four-tests)</u> |
|------------------------------|---|---|
|------------------------------|---|---|

37

|   |                      |                   |                         |
|---|----------------------|-------------------|-------------------------|
| 1 | 550-gallons-or-less  | ±0-gallons        | 5-gallons               |
| 2 | 551-1,000-gallons    | ±3-gallons        | 7-gallons               |
| 3 | 1,001-2,000-gallons  | 26-gallons        | ±3-gallons              |
| 4 |                      | <u>Weekly</u>     | <u>Monthly</u>          |
| 5 |                      | <u>Standard</u>   | <u>Standard</u>         |
| 6 | <u>Tank Capacity</u> | <u>(one test)</u> | <u>(four-test avg.)</u> |
| 7 |                      |                   | <u>Minimum</u>          |
| 8 |                      |                   | <u>Duration</u>         |
|   |                      |                   | <u>of Test</u>          |

8 If manual tank gauging is the ONLY leak detection method used:

|    |                           |                   |                  |
|----|---------------------------|-------------------|------------------|
| 9  |                           |                   |                  |
| 10 | <u>up to 550 gallons</u>  | <u>10 gallons</u> | <u>5 gallons</u> |
| 11 |                           |                   | <u>36 hours</u>  |
| 12 | <u>551-1,000 gallons</u>  | <u>9 gallons</u>  | <u>4 gallons</u> |
| 13 | <u>(when largest tank</u> |                   | <u>44 hours</u>  |
| 14 | <u>is 64" x 73")</u>      |                   |                  |
| 15 |                           |                   |                  |
| 16 | <u>1,000 gallons</u>      | <u>12 gallons</u> | <u>6 gallons</u> |
| 17 | <u>(if tank is</u>        |                   | <u>58 hours</u>  |
| 18 | <u>48" x 128")</u>        |                   |                  |
| 19 |                           |                   |                  |

20 If manual tank gauging is combined with Tank Tightness Testing:

|    |                    |                   |                   |                 |
|----|--------------------|-------------------|-------------------|-----------------|
| 21 | <u>1,001-2,000</u> | <u>26 gallons</u> | <u>13 gallons</u> | <u>36 hours</u> |
| 22 | <u>gallons</u>     |                   |                   |                 |
| 23 |                    |                   |                   |                 |

24 D. Tank tightness testing or another test of  
 25 equivalent performance must be capable of detecting a 0.1 gallon  
 26 per hour leak rate from any part of the tank that routinely  
 27 contains product while accounting for the effects of thermal  
 28 expansion or contraction of the product, vapor pockets, tank  
 29 deformation, evaporation or condensation, and the location of  
 30 the water table.

31 E. Equipment for automatic tank gauging that tests  
 32 for the loss of product and conducts inventory control must meet  
 33 the following requirements:

34 (1) the automatic product level monitor test can  
 35 detect a 0.2 gallon per hour leak rate from any part of the tank  
 36 that routinely contains product; and

37 (2) inventory control or another test of  
 38 equivalent performance is conducted according to the  
 39 requirements of item A.

40 F. Testing or monitoring for vapors within the soil  
 41 gas of the excavation zone must meet the following requirements:

42 (1) the materials used as backfill are  
 43 sufficiently porous such as gravel, sand, or crushed rock, to  
 44 readily allow diffusion of vapors from releases into the  
 45 excavation area;

46 (2) the stored regulated substance, or a tracer

1 compound placed in the tank system, is sufficiently volatile,  
2 such as gasoline, to result in a vapor level that is detectable  
3 by the monitoring devices located in the excavation zone in the  
4 event of a release from the tank;

5 (3) the measurement of vapors by the monitoring  
6 device is not rendered inoperative by the groundwater, rainfall,  
7 or soil moisture or other known interferences so that a release  
8 could go undetected for more than 30 days;

9 (4) the level of background contamination in the  
10 excavation zone will not interfere with the method used to  
11 detect releases from the tank;

12 (5) the vapor monitoring points are designed and  
13 operated to detect any significant increase in concentration  
14 above background of the regulated substance stored in the tank  
15 system, a component or components of that substance, or a tracer  
16 compound placed in the tank system;

17 (6) in the underground storage tank excavation  
18 zone, the site is assessed to ensure compliance with the  
19 requirements in subitems (1) to (4) and to establish the number  
20 and positioning of vapor monitoring points that will detect  
21 releases within the excavation zone from any part of the tank  
22 that routinely contains product; and

23 (7) vapor monitoring points are clearly marked  
24 and secured to avoid unauthorized access and tampering.

25 G. Testing or monitoring for liquids in the  
26 groundwater must meet the provisions of chapter 4725, as well as  
27 the following requirements:

28 (1) the regulated substance stored is immiscible  
29 in water and has a specific gravity of less than one;

30 (2) groundwater is never more than 20 feet from  
31 the ground surface and the hydraulic conductivity of the soil  
32 between the underground storage tank system and the monitoring  
33 wells or devices is not less than 0.01 centimeters per second,  
34 for example, the soil should consist of gravels, coarse to  
35 medium sands, coarse silts, or other permeable materials;

36 (3) the slotted part of the monitoring well

1 casing must be designed to prevent migration of natural soils or  
2 filter pack into the well and to allow entry of regulated  
3 substance on the water table into the well under both high and  
4 low groundwater conditions;

5 (4) monitoring wells are sealed from the ground  
6 surface to the top of the filter pack;

7 (5) monitoring wells or devices intercept the  
8 excavation zone or are as close to it as is technically  
9 feasible;

10 (6) the continuous monitoring devices or manual  
11 methods used can detect the presence of at least one-eighth of  
12 an inch of free product on top of the groundwater in the  
13 monitoring wells;

14 (7) within and immediately below the underground  
15 storage tank system excavation zone, the site is assessed to  
16 ensure compliance with the requirements in subitems (1) to (5),  
17 and to establish the number and positioning of monitoring wells  
18 or devices that will detect releases from any part of the tank  
19 that routinely contains product; and

20 (8) monitoring wells are clearly marked and  
21 secured to avoid unauthorized access and tampering.

22 H. Interstitial monitoring between the underground  
23 storage tank system and a secondary barrier immediately around  
24 or beneath it may be used, but only if the system is designed,  
25 constructed, and installed to detect a leak from any part of the  
26 tank that routinely contains product and also meets one of the  
27 requirements of subitems (1) to (3).

28 (1) For double-walled underground storage tank  
29 systems, the sampling or testing method can detect a release  
30 through the inner wall in any part of the tank that routinely  
31 contains product. The provisions outlined in the Steel Tank  
32 Institute's Standard for Dual Wall Underground Storage Tanks may  
33 be used as guidance for aspects of the design and construction  
34 of underground steel double-walled tanks.

35 (2) For underground storage tank systems with a  
36 secondary barrier within the excavation zone, the sampling or

1 testing method used can detect a release between the underground  
2 storage tank system and the secondary barrier according to the  
3 following requirements:

4 (a) the secondary barrier around or beneath  
5 the underground storage tank system consists of artificially  
6 constructed material that is sufficiently thick and impermeable,  
7 being at least  $10^{-6}$  centimeters per second for the regulated  
8 substance stored, to direct a release to the monitoring point  
9 and permit its detection;

10 (b) the barrier is compatible with the  
11 regulated substance stored so that a release from the  
12 underground storage tank system will not cause a deterioration  
13 of the barrier allowing a release to pass through undetected;

14 (c) for cathodically protected tanks, the  
15 secondary barrier must be installed so that it does not  
16 interfere with the proper operation of the cathodic protection  
17 system;

18 (d) the groundwater, soil moisture, or  
19 rainfall will not render the testing or sampling method used  
20 inoperative so that a release could go undetected for more than  
21 30 days;

22 (e) the site is assessed to ensure that the  
23 secondary barrier is always above the groundwater and not in a  
24 25-year flood plain, unless the barrier and monitoring designs  
25 are for use under such conditions; and

26 (f) monitoring wells and vapor monitoring  
27 points are clearly marked and secured to avoid unauthorized  
28 access and tampering.

29 (3) For tanks with an internally fitted liner, an  
30 automated device can detect a release between the inner wall of  
31 the tank and the liner, and the liner is compatible with the  
32 substance stored.

33 I. Any other type of release detection method, or  
34 combination of methods, can be used if:

35 (1) it can detect a 0.2 gallon per hour leak rate  
36 or a release of 150 gallons within a month with a probability of

1 detection of 0.95 and a probability of false alarm of 0.05; and

2 (2) the owner and operator can demonstrate to the  
3 commissioner that the method can detect a release as effectively  
4 as any of the methods allowed in items D to H and obtain the  
5 commissioner's prior approval of the method. In comparing  
6 methods, the commissioner shall consider the size of release  
7 that the method can detect and the frequency and reliability  
8 with which it can be detected. If the method is approved by the  
9 commissioner, the owner and operator must comply with any  
10 conditions imposed by the commissioner on its use to ensure the  
11 protection of human health and the environment.

12 7150.0340 METHODS OF RELEASE DETECTION FOR PIPING.

13 Each method of release detection for piping used to meet  
14 the requirements of part 7150.0300 must be conducted according  
15 to items A to C.

16 A. Methods which alert the operator to the presence  
17 of a leak by restricting or shutting off the flow of regulated  
18 substances through piping or triggering an audible or visual  
19 alarm may be used only if they detect leaks of three gallons per  
20 hour at ten pounds per square inch line pressure within one  
21 hour. An annual test of the operation of the leak detector must  
22 be conducted according to the manufacturer's requirements.

23 B. A periodic test of piping may be conducted only if  
24 it can detect a 0.1 gallon per hour leak rate at one and  
25 one-half times the operating pressure.

26 C. Any of the methods in part 7150.0330, items F to  
27 I, may be used if they are designed to detect a release from any  
28 part of the underground piping that routinely contains regulated  
29 substances.

30 7150.0350 RELEASE DETECTION RECORDKEEPING.

31 Owners and operators shall maintain records according to  
32 part 7150.0240 demonstrating compliance with applicable  
33 requirements of parts 7150.0300 to 7150.0350. These records  
34 must include the requirements of items A to C.

35 A. All written performance claims pertaining to any

1 release detection system used, and the manner in which these  
 2 claims have been justified or tested by the equipment  
 3 manufacturer or installer, must be maintained for as long as the  
 4 system is being used to comply with the requirements of this  
 5 chapter.

6 B. The results of any sampling, testing, or  
 7 monitoring must be maintained for at least ten years.

8 C. Written documentation of all calibration,  
 9 maintenance, and repair of release detection equipment  
 10 permanently located on-site must be maintained for at least ten  
 11 years after the servicing work is completed. Any schedules of  
 12 required calibration and maintenance provided by the release  
 13 detection equipment manufacturer must be retained as long as the  
 14 system is being used to comply with the requirements of this  
 15 chapter.

16 D. Documentation of the commissioner's approval of  
 17 alternate release detection methods under part 7150.0330, item  
 18 I, must be maintained for as long as the methods are being used  
 19 to comply with the requirements of this chapter.

20 ~~RELEASE-REPORTING,-INVESTIGATION,-AND-CONFIRMATION~~

21 ~~7150.0400-REPORTING-OF-SUSPECTED-RELEASES-~~

22 ~~Owners-and-operators-of-underground-storage-tank-systems~~  
 23 ~~must-immediately-report-to-the-agency-and-follow-the-procedures~~  
 24 ~~in-part-7150.0420-for-any-of-the-following-conditions:-~~

25 ~~A.--the-discovery-by-owners-and-operators-or-others-of~~  
 26 ~~released-regulated-substances-at-the-underground-storage-tank~~  
 27 ~~site-or-in-the-surrounding-area,-such-as-the-presence-of-free~~  
 28 ~~product-or-vapors-in-soils,-basements,-sewer-and-utility-lines,-~~  
 29 ~~or-free-or-dissolved-product-in-nearby-surface-or-groundwater,-~~

30 ~~B.--unusual-operating-conditions-observed-by-owners~~  
 31 ~~and-operators,-such-as-the-erratic-behavior-of-product~~  
 32 ~~dispensing-equipment,-the-sudden-loss-of-product-from-the~~  
 33 ~~underground-storage-tank-system,-or-an-unexplained-presence-of~~  
 34 ~~water-in-the-tank,-unless-system-equipment-is-found-to-be~~  
 35 ~~defective-but-not-leaking,-and-is-immediately-repaired-or~~

1 replaced, and

2           C. -- monitoring results from a release-detection method  
3 required under parts 7150.0310 and 7150.0320 that indicate a  
4 release may have occurred unless:

5           (1) the monitoring device is found to be  
6 defective, and is immediately repaired, recalibrated, or  
7 replaced, and additional monitoring does not confirm the initial  
8 result, or

9           (2) in the case of inventory control, a second  
10 month of data does not confirm the initial result.

11 7150.0410 INVESTIGATION DUE TO OFF-SITE IMPACTS.

12           When required by the commissioner, owners and operators of  
13 underground storage tank systems must follow the procedures in  
14 part 7150.0420 to determine if the underground storage tank  
15 system is the source of off-site impacts. -- These impacts include  
16 the discovery of regulated substances, such as the presence of  
17 free product or vapors in soils, basements, sewer and utility  
18 lines, on nearby surface and drinking waters, that has been  
19 observed by the commissioner or brought to the attention of the  
20 commissioner by another party.

21 7150.0420 RELEASE INVESTIGATION AND CONFIRMATION STEPS.

22           Subpart 1. -- Duty to investigate. -- Unless corrective action  
23 is initiated according to parts 7150.0500 to 7150.0570, owners  
24 and operators must investigate and confirm all suspected  
25 releases of regulated substances requiring reporting under part  
26 7150.0400 within seven days, or another reasonable time period  
27 specified by the commissioner, using the steps in subpart 2 or  
28 another procedure approved by the commissioner.

29           Subp. 2. -- Site check. -- Owners and operators must measure  
30 for the presence of a release where contamination is most likely  
31 to be present at the underground storage tank site. -- In  
32 selecting sample types, sample locations, and measurement  
33 methods, owners and operators must consider the nature of the  
34 stored substance, the type of initial alarm or cause for  
35 suspicion, the type of backfill, the depth of groundwater, and



1 other-factors-appropriate-for-identifying-the-presence-and  
2 source-of-the-release.

3 A.--If-the-test-results-for-the-excavation-zone-or-the  
4 underground-storage-tank-site-indicate-that-a-release-has  
5 occurred,owners-and-operators-must-begin-corrective-action  
6 according-to-parts-7150.0500-to-7150.0570.

7 B.--If-the-test-results-for-the-excavation-zone-or-the  
8 underground-storage-tank-site-do-not-indicate-that-a-release-has  
9 occurred,further-investigation-is-not-required-unless-directed  
10 by-the-commissioner.

11 7150.0430-REPORTING-AND-CLEANUP-OF-SPILLS-AND-OVERFILLS.

12 Owners-and-operators-of-underground-storage-tank-systems  
13 must-notify-the-agency-immediately-of-a-spill-or-overfill-which,  
14 if-not-recovered,may-cause-pollution-of-the-waters-of-the  
15 state,and-must-take-corrective-action-in-accordance-with-parts  
16 7150.0500-to-7150.0570.

17 -RELEASE-RESPONSE-AND-CORRECTIVE-ACTION-FOR  
18 UNDERGROUND-STORAGE-TANK-SYSTEMS-CONTAINING  
19 PETROLEUM-OR-HAZARDOUS-SUBSTANCES

20 7150.0500-GENERAL.

21 Owners-and-operators-of-petroleum-or-hazardous-material  
22 underground-storage-tank-systems-must,in-response-to-a  
23 confirmed-release-from-the-underground-storage-tank-system,  
24 comply-with-the-requirements-of-parts-7150.0500-to-7150.0570.

25 7150.0510-INITIAL-RESPONSE.

26 After-confirmation-of-a-release-according-to-part-7150.0420  
27 or-after-a-release-from-the-underground-storage-tank-system-is  
28 identified-in-any-other-manner,owners-and-operators-must  
29 immediately-perform-the-following-initial-response-actions:

30 A.--report-the-release-to-the-agency-by-telephone;

31 B.--identify-and-mitigate-fire,explosion,and-vapor  
32 hazards,and-notify-appropriate-public-safety-officials,and

33 C.--take-action-to-prevent-any-further-release-of-the  
34 regulated-substance-into-the-environment.

1 7150.0520-INITIAL-ABATEMENT-MEASURES-AND-SITE-CHECK.

2 Subpart-1.--Abatement-measures.--Unless-directed-to-do  
3 otherwise-by-the-commissioner, owners-and-operators-must-perform  
4 the-abatement-measures-in-items-A-to-F-within-a-reasonable  
5 period-of-time-determined-by-the-commissioner.

6 A.--Remove-as-much-of-the-regulated-substance-from-the  
7 underground-storage-tank-system-as-is-necessary-to-prevent  
8 further-release-to-the-environment.

9 B.--Visually-inspect-any-aboveground-releases-or  
10 exposed-belowground-releases-and-prevent-further-migration-of  
11 the-release-substance-into-surrounding-soils-and-groundwater.

12 C.--Continue-to-monitor-and-mitigate-any-additional  
13 fire, public-health, and-safety-hazards-posed-by-vapors-or-free  
14 product-that-have-migrated-from-the-underground-storage-tank  
15 excavation-zone-and-entered-into-subsurface-structures, such-as  
16 sewers-or-basements.

17 D.--Remedy-hazards-posed-by-contaminated-soils-that  
18 are-excavated-or-exposed-as-a-result-of-release-confirmation,  
19 site-investigation, abatement, or-corrective-action-activities.  
20 If-these-remedies-include-treatment-or-disposal-of-soils, the  
21 owner-and-operator-must-comply-with-applicable-state-and-local  
22 requirements.

23 E.--Measure-for-the-presence-of-a-release-where  
24 contamination-is-most-likely-to-be-present-at-the-underground  
25 storage-tank-site, unless-the-presence-and-source-of-the-release  
26 have-been-confirmed-according-to-the-site-check-required-by-part  
27 7150.0420, subpart-2, or-the-closure-site-assessment-of-part  
28 7150.0620.--In-selecting-sample-types, sample-locations, and  
29 measurement-methods, the-owner-and-operator-must-consider-the  
30 nature-of-the-stored-substance, the-type-of-backfill, depth-to  
31 groundwater, and-other-factors-as-appropriate-for-identifying  
32 the-presence-and-source-of-the-release.

33 F.--Investigate-to-determine-the-possible-presence-of  
34 free-product-and-begin-free-product-removal-as-soon-as  
35 practicable-and-according-to-part-7150.0530.

1       Subp.--2.--Abatement-notification.--Within-20-days-after  
2 release-confirmation,-or-within-another-reasonable-period-of  
3 time-determined-by-the-commissioner,-owners-and-operators-must  
4 notify-the-commissioner-summarizing-the-initial-abatement-steps  
5 taken-under-subpart-1-and-any-resulting-information-or-data.

6       7150.0530-FREE-PRODUCT-REMOVAL.

7       At-sites-where-investigations-under-part-7150.0520,-subpart  
8 1,-item-F,-indicate-the-presence-of-free-product,-owners-and  
9 operators-must-remove-free-product-to-the-maximum-extent  
10 practicable-as-determined-by-the-commissioner-while-continuing,  
11 as-necessary,-any-actions-initiated-under-parts-7150.0510-and  
12 7150.0520,-or-preparing-for-actions-required-under-parts  
13 7150.0540-to-7150.0560.--In-meeting-the-requirements-of-this  
14 part,-owners-and-operators-must:

15           A.--conduct-free-product-removal-in-a-manner-that  
16 minimizes-the-spread-of-contamination-into-previously  
17 uncontaminated-zones-by-using-recovery-and-disposal-techniques  
18 appropriate-to-the-hydrogeologic-conditions-at-the-site,-and  
19 that-properly-treats,-discharges,-or-disposes-of-recovery  
20 by-products-in-compliance-with-applicable-local,-state,-and  
21 federal-regulations;

22           B.--use-abatement-of-free-product-migration-as-a  
23 minimum-objective-for-the-design-of-the-free-product-removal  
24 system;

25           C.--handle-any-flammable-products-in-a-safe-and  
26 competent-manner-to-prevent-fires-or-explosions,-and

27           D.--unless-directed-to-do-otherwise-by-the  
28 commissioner,-prepare-and-submit-to-the-commissioner,-within-45  
29 days-after-confirming-a-release,-a-free-product-removal-report  
30 that-provides-at-least:

31                   (1)-the-name-of-the-person-responsible-for  
32 implementing-the-free-product-removal-measures;

33                   (2)-the-estimated-quantity,-type,-and-thickness  
34 of-free-product-observed-or-measured-in-wells,-boreholes,-and  
35 excavations;

1                   (3)-the-type-of-free-product-recovery-system  
2 used;

3                   (4)-whether-any-discharge-will-take-place-on-site  
4 or-off-site-during-the-recovery-operation-and-where-this  
5 discharge-will-be-located;

6                   (5)-the-type-of-treatment-applied-to,-and-the  
7 effluent-quality-expected-from,-any-discharge;

8                   (6)-the-steps-that-have-been-or-are-being-taken  
9 to-obtain-necessary-permits-for-any-discharge,-and

10                   (7)-the-disposition-of-the-recovered-free-product.

11 7150.0540-INITIAL-SITE-CHARACTERIZATION.

12           Subpart-1.--Site-assessment.--Unless-directed-to-do  
13 otherwise-by-the-commissioner,-owners-and-operators-must  
14 assemble-information-about-the-site-and-the-nature-of-the  
15 release,-including-information-gained-while-confirming-the  
16 release-or-completing-the-initial-abatement-measures-in-parts  
17 7150.0500-to-7150.0520.--This-information-must-include,-but-is  
18 not-necessarily-limited-to:

19                   A.--data-on-the-nature-and-estimated-quantity-of  
20 release;

21                   B.--data-from-available-sources-and-site  
22 investigations-concerning-surrounding-populations,-water  
23 quality,-use-and-approximate-locations-of-wells-potentially  
24 affected-by-the-release,-subsurface-soil-conditions,-locations  
25 of-subsurface-sewers,-climatological-conditions,-and-land-use;

26                   C.--results-of-the-site-check-required-under-part  
27 7150.0520,-subpart-1,-item-E,-and

28                   D.--results-of-the-free-product-investigations  
29 required-under-part-7150.0520,-subpart-1,-item-F,-to-be-used-by  
30 owners-and-operators-to-determine-whether-free-product-must-be  
31 recovered-under-part-7150.0530.

32           Subp.-2.--Site-characterization-report.--Within-45-days-of  
33 release-confirmation-or-another-reasonable-period-of-time  
34 determined-by-the-commissioner,-owners-and-operators-must-submit  
35 the-information-collected-in-compliance-with-subpart-1-to-the

1 commissioner-in-a-manner-that-demonstrates-its-applicability-and  
2 technical-adequacy, or-in-a-format-and-according-to-the-schedule  
3 required-by-the-commissioner.

4 7150.0550-REMEDIAL-INVESTIGATIONS-FOR-SOILS-AND-GROUNDWATER  
5 CLEANUP.

6 Subpart-1.--Cleanup-investigation.--To-determine-the-full  
7 extent-and-location-of-soils-contaminated-by-the-release-and-the  
8 presence-and-concentrations-of-dissolved-product-contamination  
9 in-the-groundwater, owners-and-operators-must-conduct  
10 investigations-of-the-release, the-release-site, and-the  
11 surrounding-area-possibly-affected-by-the-release-if-any-of-the  
12 following-conditions-exist:

13 A.--there-is-evidence-that-groundwater-wells-have-been  
14 affected-by-the-release, for-example, as-found-during-release  
15 confirmation-or-previous-corrective-action-measures;

16 B.--free-product-is-found-to-need-recovery-in  
17 compliance-with-part-7150.0530;

18 C.--there-is-evidence-that-contaminated-soils-may-be  
19 in-contact-with-groundwater, for-example, as-found-during  
20 conduct-of-the-initial-response-measures-or-investigations  
21 required-under-parts-7150.0500-and-7150.0530; and

22 D.--the-commissioner-requests-an-investigation, based  
23 on-the-potential-effects-of-contaminated-soil-or-groundwater-on  
24 nearby-surface-water-and-groundwater-resources.

25 Subp.-2.--Cleanup-investigation-report.--Owners-and  
26 operators-must-submit-the-information-collected-under-subpart-1  
27 as-soon-as-practicable-or-according-to-a-schedule-established-by  
28 the-commissioner.

29 7150.0560-CORRECTIVE-ACTION-DESIGN.

30 Subpart-1.--Design-submission.--At-any-point-after  
31 reviewing-the-information-submitted-in-compliance-with-parts  
32 7150.0510-to-7150.0550, the-commissioner-may-require-owners-and  
33 operators-to-submit-additional-information-or-to-develop-and  
34 submit-a-corrective-action-design-for-responding-to-contaminated  
35 soils-and-groundwater.--If-a-design-is-required, owners-and

1 operators-must-submit-the-design-according-to-a-schedule-and  
2 format-established-by-the-commissioner.--Alternatively, owners  
3 and-operators-may, after-fulfilling-the-requirements-of-parts  
4 7150.0510-to-7150.0550, choose-to-submit-a-corrective-action  
5 design-for-responding-to-contaminated-soil-and-groundwater.--In  
6 either-case, owners-and-operators-are-responsible-for-submitting  
7 a-design-that-provides-for-adequate-protection-of-human-health,  
8 safety, and-the-environment-as-determined-by-the-commissioner,  
9 and-must-modify-their-design-as-necessary-to-meet-this-standard.

10 Subp.-2.--Design-approval.--The-commissioner-shall-approve  
11 the-corrective-action-design-only-after-ensuring-that  
12 implementation-of-the-design-will-adequately-protect-human  
13 health, safety, and-the-environment.--In-making-this  
14 determination, the-commissioner-shall-consider-the-following  
15 factors-as-appropriate:

16 A.--the-physical-and-chemical-characteristics-of-the  
17 regulated-substance, including-its-toxicity, persistence, and  
18 potential-for-migration,

19 B.--the-hydrogeologic-characteristics-of-the-facility  
20 and-the-surrounding-area,

21 C.--the-proximity, quality, and-current-and-future  
22 uses-of-nearby-surface-water-and-groundwater,

23 D.--the-potential-effects-of-residual-contamination-on  
24 nearby-surface-water-and-groundwater, including-public-health  
25 and-safety-concerns,

26 E.--the-potential-for-human-exposure-to-the-release,  
27 and

28 F.--information-assembled-in-compliance-with-parts  
29 7150.0500-to-7150.0570.

30 Subp.-3.--Design-implementation.--After-approval-of-the  
31 corrective-action-design-or-as-directed-by-the-commissioner,  
32 owners-and-operators-must-implement-the-design, including  
33 modifications-to-the-design-made-by-the-commissioner.--They-must  
34 monitor, evaluate, and-report-the-results-of-implementing-the  
35 design-in-accordance-with-a-schedule-and-in-a-format-established  
36 by-the-commissioner.

1       Subp. 4. ~~Cleanup initiation. Owners and operators may, in~~  
 2 ~~the interest of minimizing environmental contamination and~~  
 3 ~~promoting more effective cleanup, begin cleanup of soil and~~  
 4 ~~groundwater before the corrective action design is approved,~~  
 5 ~~provided that they:~~

6           A. ~~notify the commissioner of their intention to~~  
 7 ~~begin cleanup;~~

8           B. ~~comply with any conditions imposed by the~~  
 9 ~~commissioner, including halting cleanup or mitigating adverse~~  
 10 ~~consequences from cleanup activities;~~

11          C. ~~incorporate these self-initiated cleanup measures~~  
 12 ~~in the corrective action design that is submitted to the~~  
 13 ~~commissioner for approval; and~~

14          D. ~~obtain all necessary federal, state, and local~~  
 15 ~~approvals or permits.~~

16       OUT-OF-SERVICE UNDERGROUND STORAGE TANK SYSTEMS AND CLOSURE

17 ~~7150.0600~~ 7150.0400 TEMPORARY CLOSURE.

18       Subpart 1. **Requirements.** In addition to the requirements  
 19 of chapter 7510, the Minnesota Uniform Fire Code, owners and  
 20 operators must comply with the provisions in subparts 2 to 4  
 21 relating to temporary closure.

22       Subp. 2. **Operation and maintenance during temporary**  
 23 **closure.** When an underground storage tank system is temporarily  
 24 closed, owners and operators must continue operation and  
 25 maintenance of corrosion protection according to part 7150.0210,  
 26 and any release detection according to parts 7150.0300 to  
 27 7150.0350. ~~Parts 7150.0400 to 7150.0570 must be complied with~~  
 28 ~~if a release is suspected or confirmed. However,~~ Release  
 29 detection is not required as long as the underground storage  
 30 tank system is empty. The underground storage tank system is  
 31 empty when all materials have been removed using commonly  
 32 employed practices so that no more than 2.5 centimeters, or one  
 33 inch, of residue, or 0.3 percent by weight of the total capacity  
 34 of the underground storage tank system, remain in the system.

35       Subp. 3. **Tanks out of service 90 days.** When an

1 underground storage tank system is temporarily closed for 90  
2 days or more, owners and operators must also comply with the  
3 following requirements:

4 A. leave vent lines open and functioning; and

5 B. cap and secure all other lines, pumps,  
6 passageways, and appurtenances.

7 Subp. 4. **Tanks out of service one year.** When an  
8 underground storage tank system is temporarily closed for more  
9 than 12 months, owners and operators must permanently close the  
10 underground storage tank system if it does not meet either  
11 performance standards in part 7150.0100 for new underground  
12 storage tank systems or the upgrading requirements in part  
13 7150.0110, except that the spill and overfill equipment  
14 requirements do not have to be met. Owners and operators must  
15 permanently close the substandard underground storage tank  
16 systems at the end of this 12-month period according to parts  
17 ~~7150.0610~~ 7150.0410 to ~~7150.0640~~ 7150.0440, unless the  
18 commissioner provides an extension of the 12-month temporary  
19 closure period. Owners and operators must complete a site  
20 assessment according to part ~~7150.0620~~ 7150.0420 before such an  
21 extension can be applied for.

22 ~~7150.0610~~ 7150.0410 PERMANENT CLOSURE AND CHANGES-IN-SERVICE TO  
23 STORAGE OF NONREGULATED SUBSTANCES.

24 Subpart 1. **Requirements.** In addition to the requirements  
25 of chapter 7510, the Minnesota Uniform Fire Code, owners and  
26 operators must comply with the provisions in subparts 2 to 7  
27 relating to permanent closure and changes-in-service.

28 Subp. 2. **Notice of closure or change in service.** At least  
29 ten days before beginning either permanent closure or a  
30 change-in-service under subparts 3 and 4, owners and operators  
31 must notify the commissioner of their intent to permanently  
32 close or make the change-in-service, unless such action is in  
33 response to corrective action. The required assessment of the  
34 excavation zone under part ~~7150.0620~~ 7150.0420 must be performed  
35 after notifying the commissioner but before completion of the



1 permanent closure or a change-in-service.

2       Subp. 3. **Permanent closure.** To permanently close a tank,  
3 owners and operators must empty and clean it by removing all  
4 liquids and accumulated sludges. All tanks taken out of service  
5 permanently must also be either removed from the ground or  
6 filled in with an inert solid material.

7       Subp. 4. **Storage of nonregulated substances.** Continued  
8 use of an underground storage tank system to store a  
9 nonregulated substance is considered a change in service.  
10 Before a change in service to storage of a nonregulated  
11 substance, owners and operators must empty and clean the tank by  
12 removing all liquid and accumulated sludge and conduct a site  
13 assessment according to part ~~7150.0620~~ 7150.0420.

14       Subp. 5. **Certified removers.** Owners and operators must  
15 ensure that persons performing permanent closures under subpart  
16 3 or changes-in-service under subpart 4 are in compliance with  
17 certification requirements imposed by chapter 7105. Certified  
18 removers must furnish copies of current certificates issued by  
19 the agency to the owner and operator before beginning a  
20 permanent closure under subpart 3 or a change-in-service under  
21 subpart 4.

22       Subp. 6. **Tank system closure certification.** Owners and  
23 operators must ensure that the person who removes or otherwise  
24 closes an underground storage tank system certifies in the  
25 notification form that the methods used to remove or otherwise  
26 close the tanks and piping comply with part ~~7150.0610~~ 7150.0410,  
27 subparts 3 to 5.

28       Subp. 7. **Cleaning and closure procedures.** The cleaning  
29 and closure procedures listed in one of the following documents  
30 must be used as guidance for complying with this ~~subpart~~ part:

31           A. American Petroleum Institute 1604, Removal and  
32 Disposal of Used Underground Petroleum Storage Tanks;

33           B. American Petroleum Institute 1631, Interior Lining  
34 of Underground Storage Tanks; or

35           C. American Petroleum Institute 2015, Cleaning  
36 Petroleum Storage Tanks.

1 ~~7150.0620~~ 7150.0420 ASSESSING THE SITE AT CLOSURE OR CHANGE IN  
2 SERVICE.

3       When removing or closing a tank or making a change in  
4 service to storage of a nonregulated substance, owners and  
5 operators must measure through laboratory analysis for the  
6 presence of a release where contamination is most likely to be  
7 present at the underground storage tank site. If contaminated  
8 soils, contaminated groundwater, or free product as a liquid or  
9 vapor is discovered by this measurement or by any other manner,  
10 owners and operators must notify the agency immediately and  
11 begin corrective action according to ~~parts-7150.0500-to~~  
12 ~~7150.0560~~ Minnesota Statutes, section 115.061. In selecting  
13 sample types, sample locations, and measurement methods, owners  
14 and operators must consider the method of closure, the nature of  
15 the stored substance, the type of backfill, the depth to  
16 groundwater, and other factors appropriate for identifying the  
17 presence of a release. The requirements of this part are  
18 satisfied if one of the external release detection methods  
19 allowed in part 7150.0330, items F and G, is operating according  
20 to the requirements of part 7150.0330 at the time of removal,  
21 closure, or making a change in service to storage of a  
22 nonregulated substance, and indicates no release has occurred.

23 ~~7150.0630~~ 7150.0430 APPLICABILITY TO PREVIOUSLY CLOSED  
24 UNDERGROUND STORAGE TANK SYSTEMS.

25       When directed by the commissioner, the owner and operator  
26 of an underground storage tank system permanently closed before  
27 December 22, 1988, must assess the excavation zone and close the  
28 underground storage tank system according to parts  
29 ~~7150.0600~~ 7150.0400 to ~~7150.0640~~ 7150.0440 if releases from the  
30 underground storage tank may, in the judgment of the  
31 commissioner, pose a current or potential threat to human health  
32 and the environment.

33 ~~7150.0640~~ 7150.0440 CLOSURE RECORDS.

34       Owners and operators must maintain records according to

1 part 7150.0240 that are capable of demonstrating compliance with  
 2 closure requirements under parts ~~7150.0600~~ 7150.0400  
 3 to ~~7150.0640~~ 7150.0440. The results of the excavation zone  
 4 assessment required in part ~~7150.0620~~ 7150.0420 must be  
 5 maintained for at least three years after completion of  
 6 permanent closure or change in service in one of the following  
 7 ways:

8 A. by the owners and operators who took the  
 9 underground storage tank system out of service;

10 B. by the current owners and operators of the  
 11 underground storage tank system site; or

12 C. by mailing these records to the commissioner if  
 13 they cannot be maintained at the closed facility.

14 ~~7150.0700~~ 7150.0500 INCORPORATION BY REFERENCE.

15 Subpart 1. **Scope.** For purposes of chapter 7150, the  
 16 documents in subpart 2 are incorporated by reference. They can  
 17 be found at the Minnesota State Law Library, Ford Building, 117  
 18 University Avenue, Saint Paul, Minnesota 55155 or at the  
 19 addresses indicated. If any of the documents are amended, and  
 20 if the amendments are incorporated by reference or otherwise  
 21 made a part of federal technical rules at Code of Federal  
 22 Regulations, title 40, part 280, then the amendments to  
 23 documents are also incorporated by reference in this chapter.

24 Subp. 2. **Referenced standards.** The documents incorporated  
 25 by reference in this chapter are listed in items A to K:

26 A. American Societies of Mechanical Engineers, 345  
 27 East 47th Street, New York, New York 10017.

28 (1) B31.3, Chemical Plant and Petroleum Refinery  
 29 Piping (1987); and

30 (2) B31.4, Liquid Transportation Systems for  
 31 Hydrocarbons, Liquid Petroleum Gas, Anhydrous Ammonia and  
 32 Alcohols (1986).

33 B. American Petroleum Institute, 1220 L Street  
 34 Northwest, Washington, D.C. 20005.

35 (1) 1604, Removal and Disposal of Used

1 Underground Petroleum Storage Tanks (1987);

2 (2) 1615, Installation of Underground Petroleum  
3 Storage Systems (1987);

4 (3) 1621, Bulk Liquid Stock Control at Retail  
5 Outlets (1987);

6 (4) 1626, Storing and Handling Ethanol and  
7 Gasoline-Ethanol Blends at Distribution Terminals and Service  
8 Stations (1985);

9 (5) 1627, Storing and Handling of  
10 Gasoline-Methanol/Cosolvent Blends at Distribution Terminals and  
11 Service Stations (1986);

12 (6) 1631, Interior Lining of Underground Storage  
13 Tanks (1987);

14 (7) 1632, Cathodic Protection of Underground  
15 Petroleum Storage Tanks and Piping Systems (1987);

16 (8) 2015, Cleaning Petroleum Storage Tanks  
17 (1985); and

18 (9) 2200, Repairing Crude Oil, Liquefied  
19 Petroleum Gas and Product Pipelines (1983).

20 C. American Society of Testing and Materials, 1916  
21 Race Street, Philadelphia, Pennsylvania 19103.

22 D4021-86, Standard Specification for  
23 Glass-Fiber-Reinforced Polyester Underground Petroleum Storage  
24 Tanks (1986).

25 D. Association of Composite Tanks, 108 North State  
26 Street, Suite 720, Chicago, Illinois 60602.

27 ACT-100, Specification for the Fabrication of FRP  
28 Clad/Composite Underground Storage Tanks (1989).

29 E. National Association of Corrosion Engineers,  
30 Publications Department, P.O. Box 218340, Houston, Texas 77218.

31 (1) RP-01-69, Control of External Corrosion on  
32 Underground or Submerged Metallic Piping Systems (1983); and

33 (2) RP-02-85, Control of External Corrosion on  
34 Metallic Buried, Partially Buried, or Submerged Liquid Storage  
35 Systems (1985).

36 F. National Fire Protection Association, Batterymarch

1 Park, Quincy, Massachusetts 02269.

2 (1) 30, Flammable and Combustible Liquids Code  
3 (1987); and

4 (2) 385, Standard for Tank Vehicle for Flammable  
5 and Combustible Liquids (1985).

6 G. National Leak Prevention Association, 4090  
7 Rosehill Avenue, Cincinnati, Ohio 45229.

8 631, Spill Prevention, Minimum 10-Year Life  
9 Extension of Existing Steel Underground Tanks by Lining Without  
10 the Addition of Cathodic Protection (1988).

11 H. Petroleum Equipment Institute, P.O. Box 2380,  
12 Tulsa, Oklahoma 74101.

13 RP100, Recommended Practices for Installation of  
14 Underground Liquid Storage Systems ~~(1987)~~ (1990).

15 I. Steel Tank Institute, 728 Anthony Trail,  
16 Northbrook, Illinois 60062.

17 (1) Specifications for STI-P<sub>3</sub> System of External  
18 Corrosion Protection of Underground Steel Storage Tanks (1987);

19 (2) Steel Tank Institute Standard for Dual Wall  
20 Underground Steel Storage Tanks (undated); and

21 (3) STI F894-89, Steel Tank Institute  
22 Specification for External Corrosion Protection of FRP Composite  
23 Steel Underground Storage Tanks (1989).

24 J. Underwriters Laboratories Inc., 333 Pfingsten  
25 Road, Northbrook, Illinois 60062.

26 (1) UL 58, Steel Underground Tanks for Flammable  
27 and Combustible Liquids (1986);

28 (2) UL 567, Pipe Connectors for Flammable and  
29 Combustible Liquids and LP-Gas (1989);

30 ~~(3) Proposed-UL-9717-Nonmetallic-Underground-Pipe  
31 for-Flammable-and-Combustible-Liquids,-Appendix-A-to-May-24,  
32 1989,-letter-to-Tom-Clark-from-Ray-Hernandez;~~

33 ~~(4) UL 1316, Glass-Fiber-Reinforced Plastic  
34 Underground Storage Tanks for Petroleum Products (1983); and~~

35 ~~(5) (4) UL 1746, Corrosion Protection Systems for  
36 Underground Storage Tanks (1989).~~

1 K. Underwriters Laboratories of Canada, 7 Crouse  
2 Road, Scarborough, Ontario, Canada M1R 3A9.

3 (1) CAN4-S603.1-M85, Standard for Galvanic  
4 Corrosion Protection Systems for Steel Underground Tanks for  
5 Flammable and Combustible Liquids (1985);

6 (2) CAN4-S603-M85, Standard for Steel Underground  
7 Tanks for Flammable and Combustible Liquids (1985);

8 (3) CAN4-S615-M83, Standard for Reinforced  
9 Plastic Underground Tanks for Petroleum Products (1983);

10 (4) CAN4-S631-M84, Standard for Isolating  
11 Bushings for Steel Underground Tanks Protected with Coatings and  
12 Galvanic Systems (1984);

13 (5) CAN4-S633-M84, Flexible Underground Hose  
14 Connectors for Flammable and Combustible Liquids (1984); and

15 (6) ULC Subject C107C-M1984, Guide for Glass  
16 Fibre Reinforced Plastic Pipe and Fittings for Flammable Liquids  
17 (1984).