2/19/91

STATE OF MINNESOTA
POLLUTION CONTROL AGENCY

In the matter of the Proposed Technical Standards for Owners and Operators of Underground Storage Tanks, Minnesota Rules Chapter 7150.

STATEMENT OF NEED AND REASONABLENESS

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I. INTRODUCTION

The Minnesota Pollution Control Agency (MPCA) was authorized and directed by the 1987 Minnesota Legislature to adopt rules applicable to all owners and operators of underground storage tanks (USTs). The rules must establish the safeguards necessary to protect human health and the environment. On September 23, 1988, the U.S. Environmental Protection Agency (EPA) published its final rule outlining technical requirements for USTs and state UST program approval in 40 CFR Part 280. The rule took effect 90 days after publication on December 22, 1988.

On October 18-19, 1988, the MPCA and EPA held jointly-sponsored public meetings in St. Paul and Brainerd. The purpose of the meetings was to explain the requirements of the new rule and to give members of the public an opportunity to ask questions of state and federal UST staff. On November 28, 1988, the MPCA published a "Notice of Intent to Solicit Outside Opinion" on the development of the UST technical rule for Minnesota. The stated intent was to base the rule on EPA's technical standards and corrective action requirements.

The notice was sent to all persons on the MPCA's mailing list of persons interested in new UST rules. It was also sent to individuals and groups on the mailing list maintained by the MPCA's Public Information Office. The majority of commenters urged the MPCA to adopt the federal rule as published. Based on comments received during the notice period a proposed rule was prepared which is essentially the same as the current federal UST technical standards. Because development of criteria for the corrective action portions of the rule will require additional time, the MPCA will work with members of the regulated community to develop adequate corrective action standards for a future rulemaking.

The major difference between the proposed technical rules and the EPA rules is the issue of the regulation of heating oil tanks. Heating oil tanks which the MPCA has the authority to regulate under Minn. Stat. §§ 116.46-116.50 (1990), but which are exempt from regulation in EPA's 40 CFR Part 280, have not been brought in under the proposed rule to any extent greater than they are already regulated under state law. Due to the differences in technical procedures for release detection monitoring and regulatory status of consumptive-use heating oil tanks, it has been decided to pursue regulation of only federally-regulated USTs at this time.

The proposed rule establishes technical standards and safeguards necessary to protect human health and the environment and include the following areas: 1) design, construction, installation and notification of UST systems; 2) general operating requirements; 3) release detection requirements; and 4) closure of UST systems. Regulated substances include petroleum products as well as certain hazardous materials.

II. STATEMENT OF MPCA'S STATUTORY AUTHORITY

The MPCA's statutory authority to adopt the proposed rule is set forth in Minn. Stat. § 116.49 (1990), which provides:

Subdivision 1. Rules. The agency must adopt rules applicable to all owners and operators of underground storage tanks. The rules must establish the safeguards necessary to protect human health and the environment. The agency may delay adopting the rules until the United States Environmental Protection Agency proposes regulations for regulated substances, as defined in section 116.46, subdivision 6, clause (1). The agency shall delay adopting the rules for regulated substances as defined in section 116.46, subdivision 6, clause (2), until the United States Environmental Protection Agency publishes final

regulations for underground storage tanks, or February 8, 1987, whichever is earlier.

The MPCA also has general authority to adopt rules to control water pollution, including rules prohibiting the storage of any liquid in a manner that could pollute the waters, under Minn. Stat. § 115.03, subd. 1(e) (1990). Under the above statutes, the MPCA has the necessary statutory authority to adopt the proposed rule.

III. STATEMENT OF NEED

Minn. Stat. § 14.14, subd. 2 and § 14.23 (1990) require the MPCA to make an affirmative presentation of facts establishing the need for and the reasonableness of the proposed rules. In general terms, this means that the MPCA must set forth the reasons for proposing rules and the reasons must not be arbitrary or capricious. However, to the extent that the need and reasonableness are separate, need has come to mean that a problem exists which requires administrative attention, and reasonableness means that the solution proposed by the MPCA is a proper one. The need for the rules is discussed below.

The need for these rules arises from the following sources:

1. The need to protect public health and safety and the environment from tank releases in compliance with the UST technical requirements established by EPA at 40 CFR Part 280.
2. The need to comply with the directive of Minn. Stat. § 116.49 (1990).

It is estimated that there are three to five million USTs in the United States. Over 36,000 of these tanks are registered in Minnesota. Leaks and spills from USTs can have serious health and environmental consequences. Fires and explosions have occurred during the improper removal of tanks and when

vapors from leaking tanks have entered sewers and basements. City and private water supply wells have been contaminated by leaking USTs.

On September 23, 1988, the EPA published its final rule establishing technical requirements for USTs and state UST program approval, codified at 40 CFR Part 280. This was followed on October 26, 1988, by financial responsibility requirements for UST owners, also part of 40 CFR Part 280. The EPA estimates that about 1.7 million USTs are affected by these requirements including 676,000 USTs for storing petroleum at retail motor fuel marketing outlets, 651,000 USTs for storing petroleum for other uses (i.e., fleet use and construction), 330,000 USTs for storing used oil, and 54,000 USTs for storing hazardous chemicals. In all, more than 500,000 facilities are affected by the rule. In Minnesota, over 15,000 UST facilities are regulated, including sites where fuel oil is used on the premises as a primary or backup source of heat. Currently, these heating oil tank sites are not regulated by 40 CFR Part 280, although authority has been provided to MPCA to regulate these tanks in Minn. Stat. § 116.47 (1990), if they are over 1,100 gallons in size.

The preamble to the EPA's rules (53 Federal Register, 37082 (1987) and following) describes the scope of the problem created by leaking USTs. The EPA concluded "that approximately 25 percent of existing UST systems are found to be non-tight when tested using current methods and that loose tank fittings or faulty piping causes 84 percent of these tightness test failures" (53 Federal Register, 37086 (1987)). The major causes of releases from UST systems are due to failures of unprotected tanks, leaks in delivery lines, leaks from vent pipes and fittings on top of the tank, and spill and overfill errors. Piping releases occur twice as often as releases from the tank portion of an UST system. The EPA rule requires that both new tanks and their piping be equipped with corrosion protection, leak detection, and spill and overfill devices. For

existing UST systems, timetables are established for installation of these protective measures.

According to the preamble, the requirements in the final rule for leak detection and prevention will provide society with a variety of benefits. The benefits include reductions in damages under the rule in comparison to the case without the rule. Two kinds of damages may occur as a result of leaking USTs: those that occur before a release is detected, such as contamination of private and public wells, and those that occur after a release is detected, such as contamination of soil and ground water.

ICF Incorporated (1988) has estimated for the EPA the damages nationwide from leaking USTs occurring prior to detection. Without release detection, costs attributable to damages from leaking USTs are estimated at $4.8 billion. Counting only the costs attributable to contaminated wells and damage to structures caused by the migration of volatile components (for example, explosions of accumulated gasoline fumes), the damages under the final rule are estimated to be $2.1 billion. The incremental benefits of regulation resulting from this decrease in pre-detection damages are therefore $2.7 billion.

Post-detection damages are estimated to be $52.8 billion under the base case and negligible under the UST rule. The value of post-detection damages in the base case was estimated to be at least as high as the cost of the corrective action that would be needed to meet the requirements of the technical standards. Under Minn. Stat. § 115.061, corrective actions must be taken as soon as a release is detected, so that post-detection costs are expected to be minimal. Therefore, the total incremental benefits of regulation resulting from a decrease in post-detection damages are $52.8 billion. The average benefit for each UST regulated is estimated to be $31,000 (ICF Inc., 1988).

The Minnesota Legislature recognized the need to develop a program to establish safeguards necessary to protect human health and the environment as a result of the ownership and operation of USTs. Minn. Stat. §§ 116.46-116.50 (1990) were adopted to meet this need. Minn. Stat. § 116.49 (1990) directs the MPCA to adopt rules applicable to all UST owners and operators. The MPCA was directed to delay adopting rules for petroleum USTs until the EPA published final regulations or February 8, 1987, whichever was earlier. In addition, the MPCA was given the discretion of delaying the adoption of rules relating to USTs storing hazardous substances until the EPA published rules for design and operation of these USTs. As it became apparent that the EPA would elect to publish one set of rules to address both petroleum and hazardous substance USTs, the MPCA decided to wait until the final EPA rule was published before proposing UST rules for Minnesota. In order for the MPCA to comply with the directive of Minn. Stat. § 116.49 (1990), there is a need for the MPCA to adopt rules to establish and administer a set of technical standards for owners and operators of UST systems in Minnesota. Corrective action criteria will be developed through a future rulemaking.

IV. STATEMENT OF REASONABLENESS

The MPCA is required by Minn. Stat. §§ 14.14, subd. 2 and and 14.23 (1990) to make an affirmative presentation of facts establishing the reasonableness of the proposed rules. It means that there is a rational basis for the MPCA's proposed action. The reasonableness of the proposed rules is discussed below.

A. Reasonableness of the Rules as a Whole

The rulemaking authority set forth in Minn. Stat. § 116.49 (1990) is very broad. The MPCA is directed to adopt rules applicable to all owners and operators of USTs and the rules must establish the safeguards necessary to

protect human health and the environment. The rules published by the EPA at 40 CFR Part 280 do establish technical standards and safeguards necessary to protect human health and the environment in the following areas: 1) design, construction, installation and notification of UST systems; 2) general operating requirements; 3) release detection requirements; and 4) closure of UST systems. Regulated substances include petroleum products as well as certain hazardous materials.

The EPA has provided extensive documentation of the need for and reasonableness of its UST technical rule in the background and analysis of the proposed and final rules and that documentation is hereby adopted by reference as support for these rules ((52 Federal Register, 12662-12769 (1987) and (53 Federal Register, 37082-37194 (1988)(refer to Exhibits 1 and 2)). Since the MPCA proposes to adopt the major elements of the EPA UST technical rule, the emphasis of this statement of reasonableness will be on differences between the EPA rule and the MPCA proposal and the reasons for those differences. In developing the proposed rule, the MPCA has followed the federal model, while at the same time addressing the general mandate of the statutes. The proposed rule has been drafted to be consistent with program requirements specified in Minn. Stat. §§ 116.46 to 116.50 (1990). This approach to addressing the need for an UST technical rule in Minnesota is therefore reasonable.

B. Reasonableness of Individual Rules

The following discussion addresses specific provisions of the proposed rule. Form requirements of the Office of the Reviser of Statutes (1984) have been followed. This has required that untitled subparts of the EPA rule be given headings and that the hierarchy for numbering and lettering of divisions of parts be followed. Where content of a subpart of the proposed rule is the same as the EPA rule, this fact will be noted in the following discussion and the

subpart will be cross-referenced to the applicable article of 40 CFR Part 280.

Program Scope and Interim Standards

Part 7150.0010 Applicability

This part explains the application of the proposed rule to UST systems. (40 CFR Part 280.10(a)).

Subpart 1. Scope. This subpart states that the proposed rule applies to all owners and operators of UST systems as defined by the definitions, except as provided by the exclusions and the deferrals subparts. This is reasonable because it defines the limits of the program for the regulated community.

Subpart 2. Exclusions. This subpart lists those UST systems which are excluded from the proposed rule.

2.A. UST systems storing hazardous wastes are exempt from this proposed rule because they are regulated under other state (Minn. Rules ch. 7045 (1990)) and federal (40 CFR Part 261 (1989)) law. This exemption is reasonable because the inclusion of hazardous wastes as a part of this rule would be duplicative and confusing to the regulated community.

2.B. Wastewater treatment UST systems that are part of a regulated wastewater treatment facility are exempt from the proposed rule to the extent that they are regulated under 33 USC, Sections 1317 or 1342 [1987 & Supp. 1989]. This exemption is reasonable because the inclusion of wastewater treatment UST systems as a part of this rule would be duplicative and confusing to the regulated community.

2.C. through 2.F. Tanks listed in 40 CFR Part 280.10(b)(3)-(6) are also excluded from the proposed rule. Many of these tanks are small or contain limited amounts of regulated substances. Some, such as hydraulic lift tanks,

have "built-in" release detection in that the equipment they power will not work properly if they leak, so it is reasonable that they be excluded.

2.G. through 2.N. These exclusions appear in the EPA rule at 40 CFR Part 280.12, within the definition of "underground storage tank." It is more logical and consistent to specify all excluded UST systems in one place in the proposed rule, therefore they have been moved to this subpart. Several differences which are required by Minn. Stat. § 116.47 (1990) (Exemptions) have been incorporated here. These are: 1) the inclusion of UST systems of more than 1,100 gallons capacity used for storing heating oil for consumptive use on the premises where stored; 2) the elimination of liquid traps or associated gathering lines directly related to oil or gas production because there are no such facilities in Minnesota; and 3) a minor wording change for clarity in 2.N. (replace "situated on" with "located upon").

Subpart 3. Deferrals. This subpart lists those UST systems which are deferred from all except the Program Scope and Interim Standards (parts 7150.0010 to 7150.0030) portion of the proposed rule. The proposed rule would defer the same population of tanks as are deferred from the EPA rule. Examples include airport hydrant fuel distribution systems and UST systems with field-constructed tanks. The EPA is studying what, if any, design, construction, installation, notification, release detection and closure standards should apply to these tanks. If such a tank should leak, it is still subject to the same release reporting and corrective action requirements which apply to other regulated tanks under Minn. Stat. § 115.061. Likewise, interim operating standards have been established for these tanks in the proposed rule under Minn. Rules pt. 7150.0020 (40 CFR Part 280.11).

Subpart 4. Release detection deferrals. This subpart defers UST systems storing fuel solely for use by emergency power generators from the release detection requirements of Minn. Rules pts. 7150.0300 to 7150.0350 (40 CFR Parts 280.40 to 280.45 (1988)). Since these tanks operate intermittently and are often in remote locations (i.e., along utility lines) where they are visited infrequently, it is reasonable that they be deferred from release detection requirements. The EPA will continue to study this issue.

Subpart 5. Heating oil underground storage tank deferrals. This subpart defers UST systems of over 1,100 gallons capacity used exclusively for storing heating oil for consumptive use on the premises where stored from most of the requirements of this rule. The parts which apply include notification requirements for new tanks, changes-in-service, and sales of property containing tanks (part 7150.0120, subparts 2 and 6). Releases from heating oil tanks must still be promptly reported and cleaned up. The existing authority of Minn. Stat. § 115.061 (1990) requires this. Eligible owners and operators of USTs containing heating oil are covered by requirements of the petroleum tank release cleanup act, Minn. Stat. ch. 115C (1990). It is reasonable that basic notification requirements for tank installation, changes-in-service, and property transfers apply to heating oil USTs regulated under state law. This is already mandated by Minn. Stat. §§ 116.46-116.50 (1990). Because of differences in technical procedures for release detection monitoring and issues concerning the regulatory status of consumptive-use heating oil USTs at the federal level, it is reasonable that the MPCA staff continues to research the issue of heating oil tank regulation and provides a forum for discussion of heating oil tank issues at a later date.

Part 7150.0020 Interim Standards for Deferred UST Systems

Subpart 1. Interim standards. This subpart lists the interim standards which apply to UST systems deferred from certain requirements of the proposed rule as discussed at part 7150.0010 above. These standards establish baseline criteria which all UST systems should meet to protect public health and safety and the environment. It is reasonable that these standards be in place until the EPA acquires adequate information on these tanks to justify establishment of final standards.

1.A. This interim standard requires UST systems to be installed according to American Petroleum Institute Bulletin 1615 (1987) and is consistent with the mandate of Minn. Stat. § 116.49 subd. 2(1) (1990).

1.B. through 1.D. These requirements are the same as 40 CFR Parts 280.11 (a)(1) through (3) (1988) and are consistent with the mandate of Minn. Stat. § 116.49 (1990).

Subpart 2. Systems without corrosion protection. The MPCA agrees with the requirements of the federal rule at 40 CFR Part 280.11(b). UST systems installed without corrosion protection at sites determined by a corrosion expert not to be corrosive enough to have a release due to corrosion during their operating life must have been so determined using a code of practice of the National Association of Corrosion Engineers (NACE) as listed in the rule. High water table conditions and presence of corrosive soils in Minnesota dictate that this will be a seldom-used alternative by tank owners. It is reasonable, however, that when it is chosen, the standards of NACE apply to the installation.

Part 7150.0030 Definitions

This part of the proposed rule sets forth definitions of key words or phrases used within the rule. The definitions are discussed below.

Subpart 1. Scope. This subpart states that the definitions in Minn. Stat. §§ 115C.02 and 116.46 (1990) apply to the terms used in this proposed rule, unless the terms are expressly defined in this part. Because all of these chapters apply to the Minnesota storage tank program, it is reasonable to use the same definitions throughout the program in order to achieve consistency within the program.

Subpart 2. Aboveground release. "Aboveground release" is defined as a release to the land surface or to surface water, including, but not limited to, releases from the aboveground part of an UST system and aboveground releases associated with overfills and transfer operations as a regulated substance moves to or from an UST system. It is reasonable to define this term since the rule requires corrective action for this type of release. See also definitions of "release" and "belowground release." The MPCA adopts the definition of the federal rule at 40 CFR Part 280.12.

Subpart 3. Agency. "Agency" is defined in the proposed rule as the Minnesota Pollution Control Agency. It is reasonable to define this term in order to define which agency of the state of Minnesota is responsible for program implementation.

Subpart 4. Appurtenances. Refer also to 40 CFR Part 280.12, "ancillary equipment." "Appurtenances" are defined as those pipes, fittings, flanges, valves, and pumps used to distribute, meter, or control the flow of regulated substances to or from an UST. The proposed rule uses the term "appurtenances" instead of the federal term, "ancillary equipment," in order to be consistent with usage in Minn. Stat. § 116.46 (1990). It is reasonable to define this term to describe that part of the UST system, other than the tank vessel itself, to which the rule applies. Appurtenances are a frequent source of leaks in

improperly installed or maintained UST systems. The MPCA adopts the definition of the federal rule at 40 CFR Part 280.12, "ancillary equipment."

Subpart 5. Belowground release. "Belowground release" is defined as a release below the land surface or to ground water, including, but not limited to, releases from the belowground parts of an UST system and belowground releases associated with overfills and transfer operations as a regulated substance moves to or from an UST system. It is reasonable to define this term since the rule requires corrective action for this type of release. See also definitions of "release" and "aboveground release." The MPCA adopts the definition of the federal rule at 40 CFR Part 280.12.

Subpart 6. Beneath the surface of the ground. "Beneath the surface of the ground" means beneath the ground surface or otherwise covered by earthen materials. It is reasonable to define this term because the proposed rule establishes requirements for UST systems, which are defined as being ten percent or more beneath the surface of the ground. See "underground storage tank" and "UST system." The MPCA adopts the definition of the federal rule at 40 CFR Part 280.12.

Subpart 7. Cathodic protection. "Cathodic protection" is defined as the primary means of preventing corrosion of a metal surface by making that surface the cathode of an electrochemical cell. An UST system can be cathodically protected through the application of either galvanic anodes or impressed current. It is reasonable to define cathodic protection because it is the primary method of preventing corrosion in metal tanks and pipes, thereby keeping them from leaking. The MPCA adopts the definition of the federal rule at 40 CFR Part 280.12.

Subpart 8. Cathodic protection tester. The MPCA adopts the definition of the federal rule at 40 CFR Part 280.12. A "cathodic protection tester" is

defined as a person who can demonstrate an understanding of the principles of all common types of cathodic protection systems as applied to buried or submerged metal piping and tank systems. Such persons must have education and experience in soil resistivity, stray current, structure-to-soil potential, and electrical isolation measurements of buried metal piping and tank systems. It is reasonable to define general requirements and qualifications of cathodic protection testers because their measurements and reports are an important part of determining whether metallic UST systems are protecting the environment.

Subpart 9. Change in service. "Change in service" has been defined in the proposed rule to clarify for owners and operators when they must notify the MPCA when making changes to their UST systems. A change in service includes both changes in status as defined by Minn. Stat. § 116.48, subd. 3 (1990) or an UST upgrade under this rule, subp. 55.

Subpart 10. Closure or removal. "Closure" or "removal" has been defined in Minn. Rules pt. 7105.0010, subp. 7 (State Register, January 8, 1990) and is further clarified here so UST owners and operators will know what is meant by these terms which are used interchangeably. Subpart 7 of part 7105.0010 seems to require this clarification since it defines the terms "as required by 40 CFR Part 280, or its counterpart in Minnesota rules when adopted." Since closure and removal are not defined in 40 CFR Part 280, the state definition as previously cited is referenced here.

Subpart 11. Commissioner. "Commissioner" means the commissioner of the Minnesota Pollution Control Agency. It is the official title of the MPCA's chief executive officer. Through the commissioner, MPCA is charged with implementing the UST rule.

(Note: The definition for "CERCLA" (the Comprehensive Environmental Response Compensation and Liability Act) in the federal rule has been omitted because it is not cited in the proposed state rule.)

Subpart 12. Compatible. Two or more substances are "compatible" if they maintain their respective physical and chemical properties upon contact with one another for the design life of the UST system under conditions which are likely to be encountered in the tank. It is reasonable that this term be defined because compatibility is an important factor in UST system integrity and design considerations. The MPCA adopts the definition of the federal rule at 40 CFR Part 280.12.

Subpart 13. Connected piping. "Connected piping" means underground piping including valves, elbows, joints, flanges, and flexible connectors attached to a tank through which regulated substances flow. Piping that joins two UST systems is allocated equally between them. It is reasonable that this term be defined because over half of all leak incidents are due to piping system failures and not from tanks. The MPCA adopts the definition of the federal rule at 40 CFR Part 280.12.

Subpart 14. Consumptive use. "Consumptive use" with respect to heating oil, means consumed on the premises. It is reasonable to define what is meant by consumptive use for heating oil because UST systems installed for this purpose are currently exempt from federal UST requirements. They are included within this proposed rule if they are greater than 1,100 gallons in size for notification, interim standards and corrective action requirements, as required by Minn. Stat. §§ 116.46-116.50 (1990). See proposed Minn. Rule pt. 7150.0010 subp. 2(H).

Subpart 15. Corrosion expert. The MPCA adopts the definition of the federal rule at 40 CFR Part 280.12. A "corrosion expert" is a person who, by

reason of knowledge of the physical sciences and principles of engineering and mathematics acquired by a professional education and related practical experience, is qualified to design corrosion control systems on buried or submerged metal piping systems and metal tanks. The person must be accredited or certified as being qualified by the National Association of Corrosion Engineers (NACE) or be a registered professional engineer who has certification or licensing that includes education and experience in corrosion control of buried or submerged metal piping systems and metal tanks. It is reasonable to define "corrosion expert" because such a person is required by the proposed rule to design field-installed and retrofit cathodic protection systems to ensure that operation of the UST system will protect the environment. Refer also to proposed Minn. Rules pts. 7150.0100 and 7150.0110.

Subpart 16. Dielectric material. "Dielectric material" means a material that does not conduct direct electrical current. Dielectric coatings are used to electrically isolate UST systems from the surrounding soil. Dielectric bushings are used to electrically isolate parts of the UST system from one another, for example, tank from piping. Electrical isolation of system components is an important part of designing an UST system which will protect the environment. If dielectric materials are not used or if they are improperly used, components may fail causing releases to the environment. The MPCA adopts the definition of the federal rule at 40 CFR Part 280.12.

Subpart 17. Electrical equipment. "Electrical equipment" is underground equipment that contains dielectric fluid necessary for the operation of transformers and buried electrical cable. It is reasonable to define this term because electrical equipment tanks are excluded from the requirements of the proposed rule. See proposed Minn. Rule pt. 7150.0010, subp. 2(C). The MPCA adopts the definition of the federal rule at 40 CFR 280.12.

Subpart 18. Excavation zone. The MPCA adopts the definition of the federal rule at 40 CFR Part 280.12. "Excavation zone" means the volume containing the tank system and backfill material bounded by the ground surface, walls, and floor of the pit and trenches into which the UST system is placed at the time of installation. It is reasonable to define this term in order that tank installers and removers and the regulated community will understand the boundaries for UST system design and compliance.

Subpart 19. Existing tank system. The MPCA adopts the definition of the federal rule at 40 CFR Part 280.12. An "existing tank system" is defined as one used to contain an accumulation of regulated substances for which installation began on or before December 22, 1988 (the effective date of 40 CFR Part 280). UST systems containing hazardous materials not regulated under 40 CFR Part 280 (see subpart 24) are considered "existing tank systems" if installation began on or before 90 days after the date this rule is adopted. Refer also to subpart 30, "new tank system" in this proposed rule. Installation is considered to have begun if either the owner or operator has obtained all approvals necessary to begin UST system installation or on-site physical construction or installation has begun, or the owner or operator has entered into contractual obligations that cannot be canceled or modified without substantial loss. It is reasonable that the regulated community knows what is meant by an existing tank in order that there is no misunderstanding concerning whether an UST system was regulated at the time 40 CFR Part 280 became effective.

Subpart 20. Farm tank. "Farm tank" means a tank located on a tract of land devoted to the production of crops, raising animals, (including fish), range land, nurseries with growing operations, and associated residences and improvements. A farm tank must be located on farm property. It is reasonable

to define this term because certain farm tanks are exempt from the requirements of the federal rule and this proposed rule. Refer also to proposed Minn. Rule pt. 7150.0010, subp. 2(G). The MPCA adopts the definition of the federal rule at 40 CFR Part 280.

Subpart 21. Flow-through process tank. A "flow-through process tank" forms an integral part of a production process through which there is a steady, variable, recurring, or intermittent flow of materials during the operation of the process. Not included are tanks used for the storage of materials prior to their introduction into the production process or for the storage of finished products or by-products from the production process. It is reasonable to define this term because flow-through process tanks are exempt from the proposed rule and the regulated community needs to know how such tanks are defined. Refer also to proposed Minn. Rule pt. 7150.0010, subp. 2(M). The MPCA adopts the definition of the federal rule at 40 CFR Part 280.

Subpart 22. Free product. "Free product" means a regulated substance that is present as a nonaqueous phase liquid, for example, liquid not dissolved in water. It is reasonable to define this term because technical and safety requirements for release detection and response may differ at a site where free product is present as opposed to one where only dissolved product is present. The MPCA adopts the definition of the federal rule at 40 CFR Parts 280.12 and 280.64 (1988).

Subpart 23. Gathering lines. "Gathering lines" is defined as any pipeline, equipment, facility or building used in the transportation of oil or gas during oil or gas production or gathering operations. It is reasonable to define this term because certain pipeline facilities, including gathering lines, are exempt from the proposed rule and the regulated community needs to know how such lines

are defined. The MPCA adopts the definition of the federal rule at 40 CFR Part 280.12.

Subpart 24. Hazardous material. "Hazardous material" is defined in the proposed rule to be consistent with the existing definition of a "regulated substance" in Minn. Stat. § 116.46, subd. 6 (1990). The definition is broader than the federal definition for "hazardous substance" as defined in CERCLA. "Hazardous material" includes substances listed in 49 CFR Section 172.101 (1988) including constituents of petroleum under subpart 38, item C of this proposed rule, but it does not include hazardous wastes listed under Minn. Rules ch. 7045 (1990) or 40 CFR Part 261 (1989), it does not include petroleum as defined under subparts 38A, B and D of this proposed rule, nor does it include a substance that is not liquid at a temperature of 60 degrees Fahrenheit and pressure of 14.7 pounds per square inch absolute. It is reasonable to exclude hazardous wastes from the definition because Minn. Rules ch. 7045 (1990) already contains performance standards for USTs containing these substances to protect public health and safety and the environment. It is reasonable to exclude petroleum products from this definition except for constituents of petroleum (such as benzene, toluene or xylene) which, when stored alone, are considered "hazardous materials" and are listed in 49 CFR § 172.101 (1988). It is also reasonable to exclude gaseous materials listed in 49 CFR § 172.101 (1988). Release of gases (such as propane) from a tank is addressed under Minn. Rules ch. 7510, the Minnesota Uniform Fire Code.

In addition to substances cited in 49 CFR § 172.101 (1988) (see Minn. Stat. § 116.46, subd. 6 (1990)), hazardous materials also include any mixture of these substances and petroleum, unless the amount of the hazardous material is de minimus. UST systems containing de minimus concentrations of regulated substances are excluded from the federal rule at 40 CFR Part 280.10(b)(5) and

proposed Minn. Rule pt. 7150.0010, subp. 2(E). It is reasonable that UST systems containing mixtures of petroleum and hazardous materials be required to meet operating requirements for USTs containing hazardous materials because such mixtures will generally cause greater environmental harm should they leak from a tank than if the tank contained only petroleum. By similar reasoning, substances meeting the definitions of both hazardous materials and petroleum are considered hazardous materials.

Subpart 25. Hazardous material UST system. The term "hazardous substance UST system" cited in 40 CFR Part 280.12 has been replaced by "hazardous material UST system" in the proposed rule to be consistent with Minn. Stat. § 116.46, subd. 6 (1990). See also discussion under "hazardous material," above.

Subpart 26. Heating oil. The definition for "heating oil" is the same in the proposed rule as in the federal rule at 40 CFR Part 280.12. UST systems larger than 1,100 gallons in volume storing heating oil for consumptive use on the premises where stored are regulated under Minn. Stat. §§ 116.46- 116.50 (1990), whereas these systems are excluded from federal law under the definition of "underground storage tank" (see 40 CFR Part 280.12). The MPCA has decided to defer UST systems storing heating oil for consumptive use from certain operation and release detection requirements of the federal law. However, notification requirements consistent with Minn. Stat. § 116.48 (1990) and proposed Minn. Rules pt. 7150.0120, interim standards consistent with Minn. Stat. § 116.49 (1990) and proposed Minn. Rules pt. 7150.0020, and release reporting and cleanup requirements consistent with Minn. Stat. § 115.061 (1990) and Minn. Stat. ch. 115C (1990) do apply to these tanks. It is reasonable that these requirements be applied to heating oil tanks both because their regulation is mandated by statute and because data gathered by the MPCA over the past several years has

shown that unprotected heating oil tanks have a failure rate similar to other unprotected tanks.

Subpart 27. Hydraulic lift tank. The MPCA adopts the definition of the federal rule at 40 CFR Part 280.12. "Hydraulic lift tank" means a tank holding hydraulic fluid for a closed-loop mechanical system that uses compressed air or hydraulic fluid to operate lifts, elevators, and other similar devices. It is reasonable to define this term because these tanks are exempt from federal regulation at 40 CFR Part 280.10(b)(3). This exemption is reasonable because hydraulic lift tanks tend to be small (i.e., less than 100 gallons capacity) and have "built-in" leak detection capability to the extent that the lift supplied by the tank will not operate properly if the tank or supply lines have leaks. Moreover, the environmental impacts from a leaking hydraulic lift tank will generally be minimal.

(Note: The definition of "implementing agency" in the federal rule has been omitted from this proposed rule. The MPCA is the implementing agency for the UST rule; see proposed Minn. Rules pt. 7150.0030, subp. 3.)

(Note: The definition of "liquid trap" in the federal rule has also been omitted since there are no oil and gas production facilities in Minnesota which would use liquid traps as defined by 40 CFR Part 280.12.

Subpart 28. Maintenance. The MPCA adopts the definition of the federal rule at 40 CFR Part 280.12, except that "regulated substance" replaces "product." "Maintenance" means the normal operational upkeep to prevent an UST system from releasing a regulated substance. "Regulated substance" is a more generic term than "product" and applies to all substances regulated under this rule. It is reasonable to define this term because maintenance of an UST system is an important part of assuring that the system does not leak and harm the environment.

Subpart 29. Motor fuel. "Motor fuel" means petroleum or a petroleum-based substance that is motor gasoline, aviation gasoline, No. 1 or 2 diesel fuel, or any grade of gasohol, and is typically used in the operation of a motor engine. It is reasonable to define this term because UST systems of 1,100 gallons or less capacity storing motor fuel at farms or residences are excluded from the requirements of the proposed rule at Minn. Rules pt. 7150.0010, subp. 2(G). The MPCA adopts the definition of the federal rule at 40 CFR Part 280.12.

Subpart 30. New tank system. "New tank system" means a tank system that is or will be used to contain regulated substances, and which is not defined as an existing tank system under proposed Minn. Rules pt. 7150.0030, subp. 19. New UST systems are those for which installation began after December 22, 1988 (the effective date of 40 CFR Part 280). For tanks not regulated under 40 CFR Part 280, but regulated under the authority of Minn. Stat. §§ 116.46- 116.50 (1990), the effective date to be considered a "new tank system" is 90 days after the effective date of this proposed rule. An example of a new tank system which falls into this category would be an UST storing a hazardous material which is listed in 49 CFR § 172.101 (1988) but not in CERCLA. See also the definition of "existing tank system" proposed in subpart 19, above. It is reasonable that this term be defined so that the regulated community understands which requirements apply to their UST system.

Subpart 31. Noncommercial purposes. The MPCA adopts the definition of the federal rule at 40 CFR Part 280.12. "Noncommercial purposes" with respect to motor fuel, means not for resale. It is reasonable to define this term because UST systems of 1,100 gallons or less capacity at farms or residences storing motor fuel for noncommercial purposes are exempt from the requirements of the proposed rule. Refer also to Minn. Stat. § 116.47(1) (1990).

Subpart 32. On the premises where stored. The MPCA adopts the definition of the federal rule at 40 CFR Part 280.12. "On the premises where stored" with respect to heating oil, means UST systems located on the same property where the stored heating oil is used. It is reasonable to define this term because UST systems of 1,100 gallons or less capacity storing heating oil for consumptive use on the premises where stored are exempt from the requirements of the proposed rule. Refer also to Minn. Stat. § 116.47 (1) (1990).

Subpart 33. Operational life. "Operational life" means the period starting when installation of the tank system has begun until the time the system is properly closed under the provisions of the proposed rule. It is reasonable to define this term in order that the regulated community understands what is meant by the operating life of an UST system. Once the operational life of an UST system has begun, the system is considered to be in operation until the requirements of proposed Minn. Rules pts. 7150.0400 to 7150.0440 are met. Refer also to 40 CFR Part 280.12 and Parts 280.70 to 280.74. The MPCA adopts the definition of the federal rule at 40 CFR Part 280.

Subpart 34. Operator. "Operator" is defined as a person in control of, or having responsibility for, the daily operation of a tank, and a person who is in control of, or had responsibility for, the daily operation of the tank immediately before the discontinuation of its use. This term is used throughout the Minnesota storage tank program. It also has a basis in Minn. Stat. § 116.46 (1990) and Minn. Stat. ch. 115C (1990). It is reasonable to define this term to clarify who is considered an operator of a tank and to provide consistency within the program. The definition of "operator" has been expanded over that in 40 CFR Part 280.12 to clarify that the term also applies to a person having responsibility for the operation of a tank immediately before its use was discontinued, as in the case of an UST system being taken out of service.

Clarification is also provided to show that the term "operator" also applies to persons responsible for releases of petroleum from an UST system under Minn. Stat. ch. 115C (1990) and releases of a hazardous material from an UST system under Minn. Stat. § 115B.03 (1990).

Subpart 35. Overfill release. An "overfill release" is a release occurring when a tank is filled beyond its capacity, resulting in a discharge of the regulated substance to the environment. It is reasonable to define this term because the proposed rule addresses protective measures necessary to prevent environmental damage which may result from UST system overfilling. The MPCA adopts the definition of the federal rule at 40 CFR Part 280.12.

Subpart 36. Owner. The term "owner" is used throughout the UST regulatory and cleanup programs. An "owner" is a person who holds title to, controls, or possesses an interest in a tank and a person who held title to, controlled or possessed an interest in a tank immediately before discontinuation of its use. This does not include a person who holds an interest in a tank solely for financial security, unless through foreclosure or other related actions, the holder of a security interest has taken possession of the tank. This definition includes similar clarifications as under the definition of "operator" in subpart 34 and is compatible with 40 CFR Part 280.12. It is reasonable to define this term to clarify the difference between an owner and an operator and to provide for program consistency.

Subpart 37. Person. "Person" is defined as an individual, partnership, association, public or private corporation, or legal entity, including the United States government, an interstate commission or other body, the state, or any agency, board, bureau, office, department, or political subdivision of the state, but does not include the MPCA. This definition encompasses the

definitions in Minn. Stat. chs. 115C and 116 (1990). It is reasonable to define this term to clarify its meaning and provide for program consistency.

Subpart 38. Petroleum. "Petroleum" means one of the following substances a) gasoline and fuel oil as defined in Minn. Stat. § 296.01, subds. 3 and 4 (1990); b) crude oil or a fraction of crude oil that is liquid at a temperature of 60 degrees Fahrenheit and pressure of 14.7 pounds per square inch absolute; c) constituents of gasoline and fuel oil under item a; and constituents of crude oil under item b; or d) petroleum-based substances which are comprised of a complex blend of hydrocarbons derived from crude oil through processes of separation, conversion, upgrading, and finishing, such as motor fuels, jet fuels, distillate fuel oils, residual fuel oils, lubricants, and used oils. The definition is consistent with Minn. Stat. §§ 116.46-116.50 (1990) and the federal rule at 40 CFR Part 280.12. It is reasonable to define this term to provide consistency with existing law and to clarify for the regulated community the difference between petroleum and other regulated substances.

Subpart 39. Petroleum underground storage tank system. "Petroleum UST system" includes UST systems containing petroleum as well as mixtures of petroleum with de minimus quantities of hazardous materials. See also discussion under subpart 24. It is reasonable to define this term to provide consistency with 40 CFR Part 280.12 and to clarify for the regulated community when a system must meet petroleum UST standards as opposed to hazardous material UST requirements.

Subpart 40. Pipe or piping. "Pipe" or "piping" means a hollow cylinder or tubular conduit for conveying a regulated substance from one point to another within an UST system. It is reasonable to define "pipe" or "piping" to distinguish this part of the UST system from the tank vessel itself, since design and monitoring requirements differ for each part of the system in the

proposed rule. The MPCA adopts a different definition than the federal rule at 40 CFR Part 280.12 to emphasize the more general concept of piping as a method of conveyance rather than a narrower definition based on material of construction.

Subpart 41. Pipeline facilities. "Pipeline facilities" including gathering lines, means new and existing pipe rights-of-way and any associated equipment, facilities, or buildings. It is reasonable to define this term because pipeline facilities, although regulated by other state and federal law, are exempt from 40 CFR Part 280 and this proposed rule. The MPCA adopts the definition of the federal rule at 40 CFR Part 280.12.

Subpart 42. Regulated substance. "Regulated substance" means a hazardous material or petroleum. See also subparts 24 and 38. The definition of "regulated substance" has been simplified over the same definition in 40 CFR Part 280 by referencing to the previously defined terms "hazardous material" and "petroleum." It is reasonable to define "regulated substance" in this way because it simplifies the federal definition and makes the rule less repetitive.

Subpart 43. Release. "Release" means a spilling, leaking, emitting, discharging, escaping, leaching or disposing from an UST system into the environment. This is consistent with definitions of "release" in 40 CFR Part 280.12, and Minn. Stat. § 116.46 (1990) and ch. 115C (1990). The definition also clarifies that "releases" include spills associated with overfills and transfer operations as a regulated substance is put into or discharged from an UST system. Further, "release" does not include discharges or designed venting allowed under MPCA rules.

Subpart 44. Release detection. The MPCA adopts the definition of the federal rule at 40 CFR Part 280.12. "Release detection" is the process of determining whether a release of a regulated substance has occurred from an UST

system into the environment or into the interstitial space between the UST system and its secondary barrier or secondary containment around it. It is reasonable to define this term because release detection requirements are an important part of determining whether an UST system will protect the environment as it is being operated.

Subpart 45. Repair. "Repair" means the correction, restoration, modification or upgrading of a tank system, including but not limited to, the addition of cathodic protection systems, the replacement of piping, valves, fill pipes or vents, the lining of a tank through the application of such materials as epoxy resins, and any other similar activities that may affect the integrity of the tank system. This is a more comprehensive definition of "repair" than appears in 40 CFR Part 280.12, and is consistent with the definition used in Minn. Rules Ch. 7105 (State Register, January 8, 1990) governing the certification of UST system installers, repairers and removers.

Subpart 46. Residential tank. The MPCA adopts the definition of the federal rule at 40 CFR Part 280.12. A "residential tank" is a tank located on property used primarily for dwelling purposes. It is reasonable to define this term because smaller residential tanks are exempt from requirements of the proposed rule.

(Note: The definition for "SARA" (Superfund Amendments and Reauthorization Act) in the federal rule has been omitted because it is not cited in the proposed state rule.)

Subpart 47. Septic tank. The MPCA adopts the definition of the federal rule at 40 CFR Part 280.12. "Septic tank" means a watertight, covered receptacle designed to receive or process through liquid separation or biological digestion, the sewage discharged from a building sewer. The effluent from the receptacle is distributed for disposal through the soil and settled

solids and scum from the tank are pumped out periodically and hauled to a treatment facility. It is reasonable to define this term because septic tanks are exempt from both the federal and proposed state UST rule.

Subpart 48. Storm water or wastewater collection system. The MPCA adopts the definition of the federal rule at 40 CFR Part 280.12. "Storm water or wastewater collection system" means piping, pumps, conduits, and any other equipment necessary to collect and transport the flow of surface water runoff resulting from precipitation, or domestic, commercial, or industrial wastewater to and from retention areas or areas where treatment is designated to occur. The collection of storm water and wastewater does not include treatment, except where incidental to conveyance. It is reasonable to define this term because storm water or wastewater collection systems are not considered UST systems for purposes of both the federal and proposed state UST rule.

Subpart 49. Surface impoundment. The MPCA adopts the definition of the federal rule at 40 CFR Part 280.12. "Surface impoundment" means a natural topographic depression, man-made excavation, or diked area formed primarily of earthen materials, although it may be lined with man-made materials, that is not an injection well. It is reasonable to define this term because surface impoundments are exempt from both the federal and proposed state UST rule.

Subpart 50. Tank. The MPCA adopts the definition of the federal rule at 40 CFR Part 280.12. "Tank" is a stationary device designed to contain an accumulation of regulated substances and constructed of non-earthen materials, such as concrete, steel, and plastic, that provide structural support. It is reasonable to have a generic definition of the term "tank" which is consistent with the federal definition. It aids in discussion of regulation of tank

systems in general, as opposed to specific reference to "underground storage tank systems" which are regulated under the proposed rule and "aboveground storage tank systems" regulated by Minn. Rules ch. 7100 (1990).

Subpart 51. Tank system. "Tank system" as used in this proposed rule has the same meaning as underground storage tank and underground storage tank system. It is reasonable to define this term in order that there is no misunderstanding when these terms are used interchangeably, as they are in the federal and proposed state UST rule.

Subpart 52. Underground area. "Underground area" means an underground room such as a basement, cellar, shaft, or vault providing enough space for physical inspection of the exterior of the tank situated on or above the surface of the floor. It is reasonable to define this term because tanks located in underground areas such that the tank is physically inspectable are exempt from requirements of the federal and proposed state UST rule. The MPCA adopts the definition of the federal rule at 40 CFR Part 280.12.

Subpart 53. Underground release. "Underground release" means a belowground release. Refer to 40 CFR Part 280.12 and subpart 2, above. It is reasonable to define this term since the rule requires detection of underground releases and reporting under Minn. Stat. § 115.061. See also definition of "release," subpart 43. The MPCA adopts the definition of the federal rule at 40 CFR Part 280.12.

Subpart 54. Underground storage tank; underground storage tank system. "Underground storage tank (UST)" or "UST system" means any one or a combination of containers including tanks, vessels, enclosures, or structures and underground appurtenances connected to them that is used to contain or dispense an accumulation of regulated substances, and the volume of which, including the volume of underground pipes connected to them, is ten percent or more beneath

the surface of the ground. The term does not include any tanks or piping described in proposed Minn. Rules pt. 7150.0010, subp. 2. The definition of UST system in 40 CFR Part 280.12 has been simplified in the proposed state rule so that exempted UST systems have been clearly defined in subpart 2 near the beginning of the rule, rather than listed in the definition, as with the federal rule. This approach is reasonable and is consistent with Minn. Stat. § 116.46, subd. 8 (1990).

Subpart 55. Upgrade. "Upgrade" means the addition or retrofit of systems such as cathodic protection, lining, spill and overfill controls, or piping to improve the ability of an UST system to prevent the release of product. It is reasonable to define this term because upgrading of UST systems is a primary way UST owners may bring their systems into compliance with the rule and, in so doing, help protect the environment. The MPCA adopts the federal rule at 40 CFR Part 280.12 with the addition of piping to clarify that additions or retrofits to both the tank and piping are included as part of upgrading an UST system.

Subpart 56. Wastewater treatment tank. The MPCA adopts the definition of the federal rule at 40 CFR Part 280.12. "Wastewater treatment tank" means a tank that is designed to receive and treat an influent wastewater through physical, chemical, or biological methods. It is reasonable to define this term because such tanks are exempt from the requirements of both the federal and proposed state rule.

Underground Storage Tank Systems:

Design, Construction, Installation and Notification

Part 7150.0100 Performance Standards for New Underground Storage Tank Systems

This part establishes performance standards for new UST systems. The nation's aging tank population and the resulting rapid increase in the number of reported UST system failures in recent years convinced the EPA that national design and construction requirements were needed for new UST systems. The EPA has concluded that citing industry codes of practice rather than prescribing detailed design standards would provide needed flexibility to the regulated community in planning and installing UST systems, while still providing for sufficient environmental protection. The MPCA has elected to follow this approach also.

Subpart 1. Purpose. This subpart makes clear that the performance standard section of the proposed rule is intended to prevent releases from UST systems due to structural failure, corrosion, or spills and overfills. It is reasonable that owners and operators of UST systems know what performance standards they will be required to meet in order to protect public health, safety, and the environment.

Subpart 2. Tanks. This subpart lists the standards for corrosion protection which apply to the design, construction and installation of tanks. All methods used must be in accordance with a code of practice listed in subpart 3. This is consistent with the approach taken by the EPA in 40 CFR Part 280.20(a). There are five choices for corrosion protection which are acceptable: 1) the tank may be constructed of fiberglass-reinforced plastic; 2) the tank may be constructed of dielectrically-coated, cathodically-protected steel; 3) the tank may be a composite of steel and fiberglass-reinforced plastic; 4) the tank may be constructed of metal without corrosion protection

measures if the tank site is determined by a corrosion expert not to be corrosive enough to cause the tank to have a release due to corrosion for the operating life of the tank and that records verifying this fact are kept by the owner/operator; 5) the MPCA commissioner approves a tank design in writing which will prevent a release or threatened release in a manner that is no less protective of the environment than the first four listed options. It is reasonable that the regulated community be given as wide a choice as possible of options to meet the corrosion protection requirements of the proposed rule. The performance of corrosion-protected steel, fiberglass and composite tanks was closely examined by the EPA. In general, it was found that very few failures of these "new generation" tanks have occurred. Failures which have occurred have generally been due to improper installation, which is addressed by Minn. Rules ch. 7105 (State Register, January 8, 1990). In addition to corrosion-protected tanks, it is reasonable to give tank owner/operators the option of installing nonprotected tanks if they receive a determination by a corrosion expert (see proposed Minn. Rules pt. 7150.0030, subp. 15) that the tank will not leak due to corrosion for its operating life. Because of Minnesota's relatively corrosive soils and high water table conditions, it is not expected that this option would be chosen often by UST owner/operators. Finally, alternate options for tank corrosion protection may be approved in writing by the commissioner if they are at least as protective of the environment as the other listed options. This is reasonable because it recognizes that advances in technology may develop new types of UST systems which protect the environment as well or better than the stated alternatives. UST system owner/operators must keep results of the commissioner's determination for the life of the tank.

Subpart 3. Subpart 3 cites the codes of practice which incorporate performance criteria for the tank portion of the UST system. It is reasonable

to do this in the body of the rule so the regulated community will know which codes apply to this part of the proposed rule.

Subpart 4. Piping. This subpart lists the standards for corrosion protection which apply to the design, construction and installation of piping. All methods must be in accordance with a code of practice listed in subpart 5. This is consistent with the approach taken by the EPA in 40 CFR Part 280.20 (b). Piping that routinely contains product and is in contact with the ground must be designed, constructed and protected from corrosion according to one of the following: 1) the piping may be constructed of fiberglass-reinforced plastic; 2) the piping may be constructed of dielectrically-coated, cathodically-protected steel; 3) the piping may be constructed of metal without additional corrosion protection provided it is installed at a site that is determined by a corrosion expert to not be corrosive enough to cause it to have a release due to corrosion during its operating life and that owner/operators maintain records verifying this; or 4) piping construction and corrosion protection are determined by the MPCA commissioner to be designed to prevent the release or threatened release of stored product in a manner that is no less protective of human health and the environment than the other choices given. The reasoning for offering these choices is similar to that given for tank options 1, 2, 4, and 5 in subpart 2, above. The EPA studies of release causes have shown that the piping portion of UST systems is up to twice as likely as the tank portion to be the release source. It is therefore reasonable that corrosion protection requirements for piping be at least as restrictive as those for tanks.

Subpart 5. Subpart 5 cites the codes of practice which incorporate performance criteria for the piping part of the UST system. It is reasonable to do this in the body of the rule so the regulated community will know which codes apply to this part of the proposed rule.

Subpart 6. Spill and overfill prevention equipment. The EPA has found that the surface spills and overfills that occur at UST systems are usually the result of human error, not equipment failure. There are two major types of surface releases: 1) spilling, which results from improper dispensing practices, such as disconnecting the delivery hose from a tank's fill pipe before the hose has drained completely, and 2) overfilling, which occurs when the tank liquid level exceeds tank capacity and product escapes through tank bung holes, vent lines, or fill ports. Spills and overfills occur relatively frequently, however they may not be reported because they are typically small and can be easily contained and cleaned up. However, a history of repeated spills and overfills at a tank site can accumulate in volume and cause significant soil and ground water contamination. The EPA has concluded that safeguards to protect the environment and public health and safety from the effects of spills and overfills are necessary and reasonable to require UST owners to install and the MPCA agrees.

The proposed rule requires UST owner/operators to provide spill prevention equipment such as a spill catchment basin to prevent release of product to the environment when the transfer hose is detached from the fill pipe. Overfill prevention equipment that will either automatically shut off flow into the tank when the tank is no more than 95 percent full or alert the transfer operator when the tank is no more than 90 percent full by restricting flow into the tank or triggering a high-level alarm is required. Spill and overfill prevention equipment is not required if alternative equipment that the MPCA commissioner determines is no less protective of the environment than that specified above is used. UST systems filled by transfers of no more than 25 gallons at a time

(such as most used oil tanks) do not require spill and overfill prevention equipment. The EPA selected the 25 gallon limit because it is common industry practice at automative service centers to use containers holding up to 25 gallons for storing used oil prior to putting it into an UST. The EPA has concluded, that the likelihood of overfilling the tank is lessened because the volume being transferred is much smaller than the tank volume. In addition, the maximum size of a spill that could occur is 25 gallons. A spill of that size would be much easier to contain and clean up than a spill or overfill of several thousand gallons that can occur during product transfer from a tanker truck to an UST. The EPA has concluded, and the MPCA agrees, that proper operating practices and procedures will adequately protect the human health and the environment.

Subpart 7. Installation. UST systems, including all tanks and piping must be installed according to one or more of the codes of practice listed in this subpart and according to all manufacturer's instructions. This is consistent with 40 CFR Part 280.20(d) and Minn. Stat. § 116.49, subd. 2(1) (1990).

Subpart 8. Certification of installation. UST system owner/operators must ensure that their systems comply with subpart 7 by certifying on the Minnesota UST notification form that the installer is in compliance with Minn. Stat. § 116.491 (1990) and Minn. Rules ch. 7105 (State Register January 8, 1990) and that all work listed in the manufacturer's installation checklists has been completed. This subpart has been simplified from 40 CFR Part 280.20(e), because Minnesota has already implemented an UST installer certification program and this will be the primary assurance to UST owner/operators that UST systems are being properly installed. The Minnesota UST notification form (see proposed Minn. Rules pt. 7150.0120) has been modified to serve as the certification of compliance required by the EPA at 40 CFR Part 280.20(e). This is reasonable

because it will limit the paperwork required by UST owners by reducing the UST notification and certification of compliance for new UST systems to one form. It is also reasonable to require manufacturer's installation checklists to be completed because this will help UST installers insure that their systems will protect the environment. Completion of installation checklists is also one basis for manufacturers to enforce warranty conditions on their systems.

Part 7150.0110 Upgrading of Existing UST Systems

Subpart 1. Alternatives allowed. This subpart establishes the alternatives UST owners have before December 22, 1998, the ten-year phase-in period established by the EPA at 40 CFR Part 280. Basically, the owners have three options: 1) install new tanks which meet the performance standards in proposed part 7150.0100, above; 2) upgrade their UST system to meet requirements of proposed subparts 2 through 4 below; or 3) close the system in accordance with the proposed closure requirements. The EPA carefully considered what would be a reasonable approach to upgrading the nation's aging UST population, including: rapid upgrade and replacement (within 3 to 5 years), gradual upgrade and replacement (within 6 to 12 years), and no required upgrade and replacement of existing UST systems. The EPA selected the gradual approach, proposing that all existing UST systems storing regulated substances be required to either upgrade to new tank standards within 10 years (through retrofitting or replacement) or be permanently closed. The MPCA agrees with this approach because it appears to complement current industry trends toward upgrading or replacing voluntarily, while setting a clear target date by which all upgrades and replacements must be completed.

Subpart 2. Tank upgrading requirements. This subpart establishes allowable options for upgrading existing tanks by providing corrosion protection.

Upgrading options include internal lining, cathodic protection, or both internal lining and cathodic protection. To use internal lining of a tank by itself as an upgrading option, the tank must be internally inspected after 10 years and every 5 years thereafter. Interior lining used as the sole method of protecting a tank from corrosion is not regarded by the EPA as a permanent upgrade, and the MPCA concurs with this position. It is adequate only if it continues to meet original lining design specifications as determined by periodic internal inspection of the tank. If a lined tank does not meet original design specifications, it no longer meets the upgrading requirements and, if it cannot be repaired in accordance with industry codes, it is subject to the unprotected tank requirements and must be replaced after 1998. Lining of tanks must be done in accordance with proposed Minn. Rules pt. 7150.0230 (Repairs Allowed).

A tank may be upgraded by cathodic protection alone if the cathodic protection system meets the requirements for new tanks (proposed Minn. Rules pt. 7150.0100, subp. 2(B), above) and the integrity of the tank is ensured using one of four methods: 1) internal inspection to ensure the tank is structurally sound and free of corrosion holes, 2) reviewing results of release detection monitoring installed according to proposed Minn. Rules pt. 7150.0330, E to I (the tank must be less than ten years old to apply this option), 3) tightness testing the tank twice, once before installing the cathodic protection system and again between three and six months following first operation of the system (the tank must be less than ten years old to apply this option), and 4) assessing the tank for corrosion by a method that is determined by the MPCA commissioner to prevent releases in a manner that is no less protective than 1) through 3). This approach is reasonable in that it allows upgrading of younger tanks through cathodic protection alone while helping ensure that older tanks (over ten years) will not be upgraded unless they pass an internal inspection.

By offering the fourth option of method-specific commissioner approval, the EPA recognizes that there may be other methods of establishing a tank's integrity whose effectiveness has not been fully demonstrated but which may be appropriate under certain circumstances.

Finally, UST owners are given the option of using both cathodic protection and internal lining to comply with upgrading requirements. The lining is intended to provide protection from internal corrosion, while the cathodic protection prevents exterior corrosion. Although obviously a more costly option than using cathodic protection or lining alone, this option is certainly reasonable in that it allows for an added measure of environmental protection. In addition, if either option should fail for some reason, the UST would not necessarily need to be treated as a non-upgraded tank, provided the required monitoring of the viable option is maintained.

Subpart 3. Piping upgrading requirements. Metal piping that routinely contains product and is in contact with the ground must be cathodically protected and meet the performance standards for new underground piping systems. Upgraded metal piping does not have to be dielectrically coated. Pipe lining is a developing technology that may eventually become a viable option for upgrading some types of metal piping. The technology requires more development and testing, however, to prove its effectiveness for use on small-diameter pipes and thus was not chosen as an option for upgrading by the EPA in the final rule. It is reasonable that, as with the tank part of the UST system, cathodic protection be allowed as a method for upgrading existing unprotected metal piping and that performance standards for new piping be met. A properly designed cathodic protection system on bare metal piping will effectively stop further corrosion from occurring and thus protect the environment from impacts of leaks which may develop. However, some UST owners may find that although it may be cost

effective to retrofit a tank with cathodic protection, it may be easier and less expensive to replace old metal piping with protected piping, especially if the piping run is short.

Subpart 4. Spill and overfill prevention equipment. To prevent spilling and overfilling associated with product transfer, existing UST systems must be upgraded to meet new system standards as discussed under proposed Minn. Rules pt. 7150.0100, subp. 6, above, by December 22, 1998. Such equipment must generally include devices such as a spill catchment basin that will prevent release of product to the environment and overfill prevention equipment that will either automatically shut off flow into the tank when it is no more than 95 percent full or alert the transfer operator when the tank is no more than 90 percent full by restricting flow into the tank or triggering a high-level alarm. As mentioned above, spills and overfills occur relatively frequently during UST system operation, however they may not be reported because they tend to be small and can be easily contained and cleaned up. A history of repeated spills and overfills at a tank site can accumulate in the soil and eventually cause significant contamination. Therefore, prevention is the key to managing the spill and overfill problem and it is reasonable to require the relatively inexpensive retrofitting of existing systems with this preventive equipment.

Part 7150.0120 Notification Requirements

Subpart 1. Notice of underground storage tank system installation. At least 30 days before beginning installation of an UST system under proposed part 7150.0100, owners and operators must notify the commissioner of their intent to install the UST system. This subpart is similar to the advance notice for removal of an UST system required by part 7150.0410, subpart 2. This is a reasonable requirement to enable the MPCA to schedule inspections of UST

installations and coordinate technical assistance efforts with owner/operators, local authorities and others.

Subpart 2. Notification of new tanks and changes in service. The Hazardous and Solid Waste Amendments of 1984 (Public Law No. 98-616) amended the federal Resource Conservation and Recovery Act to include a national program for the notification of UST systems by their owners. Under this program, tank owners must provide information to the EPA such as tank type, size and contents. Considerable flexibility was provided to states to establish their own notification programs. States could develop their own reporting formats requiring the submission of more UST system information than the EPA, provided minimum information requirements were met. In Minnesota, the UST notification requirements were passed by the legislature in 1985 as Minn. Stat. § 116.48 (1990). UST system owners were given until June 1, 1986, to report the existence of their systems to the MPCA. After June 1, any owner bringing a new UST system into use was given 30 days to report. The MPCA chose to develop its own notification form incorporating the EPA minimum requirements and certain additional information. In November 1985, the MPCA began a program to distribute, receive and organize data collected from the notification forms. This subpart solidifies the notification requirements for UST systems in federal law (40 CFR Part 280.22) and state rulemaking. The language of 40 CFR Part 280.22 has been simplified because the statutory mandate of Minn. Stat. § 116.48 (1990) establishes the minimum requirements which the state's notification program must meet. It is reasonable for the state to operate and maintain a notification program so that the nature of Minnesota's UST population may be determined and tracked. Information on UST sites as provided by their owners through the notification program is used every day by the MPCA in technical assistance, enforcement, and cleanup activities.

Subpart 3. Owner and operator tank system certification. This subpart requires owners and operators of new UST systems to certify on the notification form compliance with installation, cathodic protection, and release detection requirements under 40 CFR Part 280, Subparts B and D (proposed Minn. Rules pts. 7150.0100, 7150.0310, and 7150.0320) and 40 CFR Part 280, Subpart H. The Minnesota UST notification form has been modified to include these requirements. It is reasonable that the MPCA have the authority to request this information to ensure that the program requirements have been met.

Subpart 4. Installer tank system certification. This subpart requires UST system owner/operators to ensure that the person who installed the system certifies that the installation methods comply with proposed Minn. Rules pt. 7150.0100, subp. 7 (Installation). Also, the installer must be in compliance with certification requirements of Minn. Stat. § 116.491 (1990) and Minn. Rules ch. 7105 (State Register, January 8, 1990). It is reasonable to require UST owner/operators to ensure that new installations meet current requirements of the law, especially regarding installation practices, since this has been identified as a major area of concern for premature UST system failures.

Subpart 5. Repairer tank system certification. This subpart requires UST system owner/operators to ensure that the person repairing the system certifies that methods used to repair tanks and piping comply with part 7150.0110 (Upgrading UST Systems) and part 7150.0230 (Repairs Allowed). Also, the repairer must be in compliance with certification requirements of Minn. Stat. § 116.491 (1990) and Minn. Rules ch. 7105 (State Register, January 8, 1990). It is reasonable to require UST owner/operators to ensure that repairs meet current requirements of the law, since proper repairs will extend the life of an UST system and help protect public health, safety and the environment.

Subpart 6. Tank seller notification. This subpart requires a person who sells a tank or property that the person knows contains a tank to notify the purchaser of the notification requirement in writing. This differs in two respects from the requirements of 40 CFR Part 280.22(g) in that the notification extends not only to tanks but also to property the seller knows contains tanks and the notification must be in writing. The MPCA has found that many UST problems have been related to buyers of property who were not aware that the land they were buying contained underground tanks. It is reasonable that sellers be required to disclose this information in writing. It is also consistent with the mandate of Minn. Stat. § 116.48 (1990).

General Operating Requirements

Part 7150.0200 Spill and Overfill Control

Subpart 1. Spill and overfill release prevention. This subpart requires UST owner/operators to ensure that releases due to spilling or overfilling do not occur. The volume available in the tank must be greater than the volume of product to be transferred to the tank before the transfer is made. The transfer operation must be constantly monitored to prevent spilling or overfilling. Although the EPA states that responsible carriers may be primary agents in the field to prevent spills and overfills, the agency has taken the approach of making the UST system owner and operator responsible for preventing them because it has no legal authority to regulate transporters under Subtitle I of RCRA. Since some UST systems are in large tank farms where it is not feasible or economical, especially during multiple filling operations, to have someone present at each tank as it is being filled, the EPA has required only that transfer operations be constantly monitored. This allows for a person at the

UST site, but not necessarily at the transfer point, to monitor a transfer using remote sensing equipment that can prevent a spill or overfill from occurring (40 CFR Part 280.30(a)).

Subpart 2. Reporting and cleanup. As required by Minn. Stat. § 115.061 (1990), owners and operators must report, investigate, and clean up any spills and overfills. This is reasonable to help ensure that releases due to spilling or overfilling will be reported, investigated and cleaned up promptly, minimizing threats to public health and safety or the environment (40 CFR Part 280.30(b)).

Part 7150.0210 Operation and Maintenance of Corrosion Protection

Subpart 1. Owner and operator compliance. Owners and operators of steel UST systems with corrosion protection must ensure that releases due to corrosion are prevented for as long as the system is used to store regulated substances or is temporarily closed in accordance with part 7160.0400. Since historically the most frequent cause of failures in unprotected steel UST systems has been corrosion, it is reasonable that owner/operators of new or upgraded UST systems be required to monitor and maintain corrosion protection systems to ensure that releases to the environment do not occur. Requirements in this regard are given in subparts 2 through 5 (40 CFR Part 280.31).

Subpart 2. Corrosion protection system maintenance. Metal components of the part of the UST system that routinely contain product and are in contact with the ground must have continuous corrosion protection. New requirements for spill and overfill equipment and good operating practices will prevent releases from the top of the tank and vent piping. Corrosion protection is not required for the metal fill pipes of tanks that have a drop tube because the drop tube is the part of the tank that routinely contains product. The drop tube is not in contact with the soil and thus does not require corrosion protection.

Similarly, vent piping is not used for product delivery and presents a minimum risk for release to the environment. It is reasonable to require corrosion protection where metal components contain product and are in contact with soil, as this is where corrosion is most likely to occur resulting in releases with serious environmental impacts. Likewise, it is not necessary to corrosion protect metal components which do not routinely contain product and which are not in contact with the soil (40 CFR Part 280.31(a)).

Subpart 3. Cathodic protection system maintenance. For UST systems using cathodic protection as a means of corrosion protection, owner/operators must ensure that the cathodic protection system is checked for proper operation by a qualified cathodic protection tester (see 40 CFR Part 280.12 and proposed Minn. Rules pt. 7150.0030, subp. 8) within six months of installation and at least every three years thereafter. Criteria used to determine that cathodic protection is adequate must be according to a code of practice listed in this subpart. It is reasonable to require periodic maintenance of cathodic protection systems by qualified individuals to help ensure that they are operating properly and protecting the environment. The MPCA has chosen the inspection time frame published by the EPA as long as a recognized code of practice is used, such as the National Association of Corrosion Engineers' Standard RP-02-85 (40 CFR Part 280.31(b)).

Subpart 4. Impressed current system maintenance. UST systems using impressed current cathodic protection as a means of protecting against corrosion must be inspected every 60 days to ensure proper operation. The EPA has determined that a loss of power to an impressed current system for up to 60 days is unlikely to result in failure of the system due to corrosion. The inspection is straightforward and is conducted simply to ensure that the equipment is running properly. Most of these systems include a light on a control panel that

indicates proper operation. No special training is needed to perform this inspection (40 CFR Part 280.31(c)).

Subpart 5. Recordkeeping. Owner/operators must maintain records of results of testing from the last two service checks required by subpart 3 (which must be performed by a corrosion protection tester) and the last three inspections required by subpart 4 (which can be performed by the owner or operator). It is reasonable to require a short record of recent test results so the owner/operator can demonstrate that the proper operation and maintenance of the cathodic protection system is being carried out (40 CFR Part 280.31(d)).

Part 7150.0220 Compatibility

This part requires owners and operators to use UST systems made of or lined with materials that are compatible with the substance stored. Owners and operators storing alcohol blends are referred to the listed guidance to comply with requirements of this part. During the development of its rule, the EPA sought information on problems reportedly caused by incompatibility of fiberglass tanks and alcohol-blended fuels. The EPA found no demonstrated incompatibility problem with 10 percent alcohol-blended fuels and fiberglass tank systems. Ten percent blends are currently common in the petroleum industry, although there is a possibility that future fuels may be blended with higher percentages of alcohol to address clean air requirements. New fiberglass tanks are being manufactured to be compatible with 100 percent alcohol. In addition, standard fiberglass tanks can be relined with resins that are compatible with new fuels. Because of rapid technological changes in the area of alcohol blending of petroleum products, industry codes are cited in this part as guidance in helping owners and operators with alcohol-blended fuels satisfy the compatibility requirement (40 CFR Part 280.32), and not as mandatory standards.

Part 7150.0230, Repairs Allowed

This part requires owners and operators of UST systems to ensure that any repairs made to the system will prevent releases due to structural failure or corrosion for as long as the system is used to store regulated substances. In Minnesota, owners and operators must also ensure that repairs made are performed by a person certified by the state to do this work under authority provided by Minn. Stat. § 116.491 (1990) and Minn. Rules ch. 7105 (State Register, January 8, 1990). These requirements are reasonable to help ensure that the environment will be protected when repairs to UST systems are made. This part lists six requirements that UST system repairs must meet:

1) Repairs to UST systems must be properly conducted according to a code of practice listed in this item. The proposed rule cites codes developed by a nationally recognized association or an independent testing laboratory so that UST owner/operators have a definite understanding of which codes of practice may be followed by tank repairers to achieve compliance.

2) Repairs to fiberglass-reinforced plastic tanks must be made according to a code of practice developed by a nationally recognized association or an independent testing laboratory similar to item 1), above. It was decided to leave the references to national associations and testing laboratories in place as a means of compliance for fiberglass USTs because repair protocols for these tanks are being developed as composition of fiberglass tanks changes in response to changing composition of fuels. The reference in the EPA rule to repairs being made by the UST manufacturer's authorized representative has been deleted because in Minnesota, any representative making a repair has to meet requirements of Minn. Rules ch. 7105 (State Register, January 8, 1990).

3) Metal pipe sections and fittings that have released product as a result of corrosion or other damage must be replaced. Fiberglass pipes and fittings

may be repaired in accordance with manufacturer's specifications. Repair and maintenance of metal valves is allowed provided that these can be done in a manner that provides sufficient protection against releases. Any releases which occur as a result of corrosion or other damage to piping are subject to reporting and corrective action requirements. Initially, the EPA proposed that all piping be replaced from which a release had occurred. The EPA received comments indicating that fiberglass piping could be satisfactorily repaired and elected to allow that option in the final rule. The MPCA believes that this is a reasonable approach in keeping with industry codes and practices. Item 4 below helps assure that repaired tanks and piping will be tested and monitored to provide for environmental protection.

4) Repaired tanks and piping must be tightness tested according to proposed Minn. Rules pts. 7150.0330(D) (tanks) and 7150.0340(B) (piping) within 30 days after completion of the repair. Exceptions are if the tank is internally inspected, the UST system is monitored monthly in accordance with proposed Minn. Rules pt. 7150.0330 D to I, or another test method is used as approved by the commissioner. It is reasonable to require release detection and quality control inspections for repaired tanks and piping to help ensure that the UST system repair or lining of a tank was performed correctly.

5) Within six months of the repair of a cathodically protected UST system, the cathodic protection system must be checked for proper operation according to proposed Minn. Rules pt. 7150.0210(3) and (4) above. This is reasonable to assure the repaired system is performing correctly and protecting the environment.

6) UST system owner/operators must maintain records of all repairs and any commissioner's determinations referenced above to demonstrate compliance with this part for the remaining operating life of the UST system. This is

reasonable so that a permanent record is available to the owner/operator, the MPCA and other officials should a problem develop with the UST system or a nearby system. Since the MPCA rule adds the option of commissioner's discretion in determining compliance with this part, it is reasonable that the results of this determination also be made part of the permanent records.

Part 7150.0240 Reporting and Recordkeeping

This part brings together in one place in the rule the recordkeeping and reporting requirements which owner/operators of UST systems must meet. Because of the large number of tank sites nationwide, the EPA has chosen to emphasize self-monitoring and reporting in the rule. Owner/operators are required to cooperate fully with inspections, monitoring and testing conducted by the MPCA as well as requests for document submission and results of any testing or monitoring conducted by the owner/operator. Refer also to 40 CFR Part 280.34.

There are two main divisions of requirements for reporting and recordkeeping required of owner/operators of UST systems: 1) information which must be submitted to the MPCA commissioner and 2) information which must be maintained by the owner/operator. Information which must be submitted includes:

1) notification of all UST systems, including the certification of installation (proposed Minn. Rules pts. 7150.0120 and 7150.0100(8));

2) notification of the discovery of an abandoned tank or of any change in uses, contents or ownership of a tank (Minn. Stat. §§ 116.48(2) and (3) (1990));

3) reports of all releases (including suspected releases), spills and overfills, and confirmed releases (Minn. Stat. § 115.061);

4) information gained in the course of taking corrective action (Minn. Stat. § 115C.02(4)); and,

5) notification before permanent closure or change in service (proposed Minn. Rules pt. 7150.0410).

Information which must be maintained includes:

1) an analysis of site corrosion potential if corrosion protection equipment is not used (proposed Minn. Rules pt. 7150.0100(2) and (4));

2) the MPCA commissioner's determination that alternative corrosion protection or spill and overfill prevention equipment may be used (proposed Minn. Rules pt. 7150.0100(2), (4), and (6));

3) documentation of operation of corrosion protection equipment (proposed Minn. Rules pt. 7150.0210(5));

4) documentation of UST system repairs (proposed Minn. Rules pt. 7150.0230(F));

5) documentation of compliance with release detection requirements (proposed Minn. Rules pt. 7150.0350); and,

6) results of the site investigation conducted at closure (proposed Minn. Rules pt. 7150.0440).

Owners and operators must keep required records either at the UST site where they are available for inspection by the MPCA or at a readily available alternative site where they can be provided for inspection to the MPCA upon request. An additional alternative is provided to owner/operators closing sites in that they may mail closure records to the MPCA if the records cannot be kept on the site.

The EPA comments in the preamble to 40 CFR Part 280 that it received widespread support for the general notion that some recordkeeping and reporting is essential to ensure that owners and operators adhere to the technical standards. The EPA's approach is to impose the minimum burden on the regulated community while ensuring that owners and operators will be able to demonstrate,

at the request of the implementing agency (MPCA), whether their UST systems are being managed in a manner that will protect human health and the environment. The MPCA favors this approach also. The reporting and notification requirements should help foster the self-implementation which underlies the technical rule. Given the large size of the UST regulated community, it is impractical and unnecessary to overburden the MPCA with periodic or routine reports from UST facilities that are operating properly and have no adverse environmental impacts. At the same time, it is reasonable that the MPCA have rapid access to reports and records to assist with a wide range of environmental protection activities from emergency response to routine inspections.

Release Detection

Part 7150.0300 General Requirements for All Underground Storage Tank Systems

New and existing UST systems properly installed, protected from corrosion, and equipped with spill and overfill protection will dramatically reduce UST system releases. Release detection is an essential backup measure to prevention, particularly for unprotected steel UST systems prior to upgrading or replacement. It is also very important for pressurized piping systems because they are prone to more frequent and larger releases than other types of piping systems. Six general categories of release detection methods have been successfully applied to USTs: tightness or precision tests, tank gauging systems, inventory control methods, ground-water monitoring, vapor monitoring, and interstitial monitoring. Site-specific conditions will generally dictate which method or methods are most appropriate for a given location. The choice of options helps maintain flexibility for both the implementing agency (the MPCA) and UST owner/operators.

Subpart 1. Methods. Owners and operators of new and existing UST systems must provide a method, or combination of methods, of release detection that: 1) can detect a release from any part of the tank and piping that routinely contains product; 2) is installed, calibrated, operated, and maintained according to manufacturer's instructions (including routine maintenance and service checks); 3) meets the performance requirements of the release detection part of the rule. The basis for this in the EPA rule is at 40 CFR Part 280.40(a).

In general, the rule allows use of a single properly installed and operated release detection method for tanks when testing is performed monthly. When less frequent monitoring is used, it must be backed up by use of monthly inventory control. Owners and operators may use multiple methods if they desire. Frequent use of a single detection method combined with prevention measures contained in other sections of the rule is sufficient to protect human health and the environment. The performance standards, design criteria, and limitations on methods contained in the rule are necessary and reasonable to ensure that optimum performance of each release detection method is achieved. Repeating a test monthly dramatically reduces the possibility of failing to detect a leak. Each test serves as a separate check of the integrity of the UST system. The EPA's research confirms the success of single methods in detecting releases from UST systems. The EPA states that for tanks and suction piping systems, one detection method, combined with prevention efforts, should virtually eliminate undetected releases.

Even with good efforts at prevention, operation of pressurized piping systems may still result in significant releases. The advantage of these systems is that they allow a large volume of product to be distributed quickly compared with suction systems. Because of the potential for pressurized UST

piping systems to lose large volumes of product quickly to the environment if a release is not detected, the rule requires existing and new pressurized lines to use both automatic line leak detectors and another leak detection method (either monthly monitoring or annual line tightness tests).

Subpart 2. Release notification. When a release detection method operated according to the requirements of this subchapter indicates a release may have occurred, owners and operators are required to notify the MPCA according to Minn. Stat. § 115.061 (1990). The basis for this in the EPA rule is at 40 CFR Part 280.40(a)(3). The purpose of this subpart is to bring together the release detection reporting requirements in the same subpart as the release detection technical requirements. Prompt release notification is a primary factor in limiting potentially costly corrective action. It is also a prerequisite for reimbursement of UST system owner/operators under Minn. Stat. § 115C.09 (1990).

Subpart 3. Release detection schedule. Release detection requirements for existing UST systems are phased in based on age (except pressurized pipe). New UST systems are required to have release detection upon installation. Hazardous material UST systems which are not regulated by 40 CFR Part 280 (see Minn. Stat. § 116.46, subd. 6 (1990) and proposed Minn. Rules pt. 7150.0030, subp. 24) must comply with the leak detection phase-in schedule or by 180 days after the date of publication of this proposed rule, whichever is later.

The EPA examined a variety of approaches to phase-in periods and generally recommended age as the most appropriate basis for the phase-in. The phase-in period from date of enactment (December 22, 1988) covers five years, short enough to ensure that the oldest tanks (those unprotected from corrosion) are monitored soonest, yet long enough to allow time for the release detection industry to respond to the demand for new equipment, for owners and operators of

existing tanks to plan their needs, and for the implementing agencies like the MPCA to develop their own programs. For the reasons discussed above, pressurized piping systems are put on a faster track for retrofit with line leak detectors (by December 1990). Retrofitting with line leak detectors is relatively easy and inexpensive, the devices are highly effective, and many systems are already equipped with the devices.

Subpart 4. Closure. Existing UST systems that cannot meet the above release detection requirements must close in accordance with proposed Minn. Rules pts. 7150.0400 to 7150.0440. The basis for this in the EPA rule is at 40 CFR Part 280.40(d). This is a reasonable requirement because most existing UST systems are not protected from corrosion and will eventually leak. The phase-in schedule in the rule is considered the maximum time that these systems should be allowed to operate without release detection. By the phase-in date appropriate to the tank age, the owner must either have provided release detection or properly close the UST system and complete a site assessment.

Part 7150.0310 Requirements for Petroleum Underground Storage Tank Systems

The proposed rule offers a variety of release detection methods for petroleum UST systems. New or existing UST systems can perform monthly monitoring using automatic tank gauges, vapor monitors, ground-water monitors, interstitial monitors, or other methods approved by the MPCA. During the ten-year upgrade period at existing tank sites that are not adequately protected from corrosion and lack spill and overfill equipment, the rule requires either annual tank tightness testing combined with monthly inventory controls or monthly monitoring. Owners of tanks meeting the standards for new or upgraded systems are required either to conduct tank tests every five years combined with monthly inventory controls for ten years following the date of installation or upgrade or until December 1998, whichever is later, or to

conduct monthly monitoring. In both cases, by the end of the ten-year period, these USTs must have approved monthly monitoring. An exception to the preceding is that tanks with a capacity of 1,000 gallons or less may use weekly manual tank gauging (discussed below) as the sole method of release detection. The basis for this in the EPA rule is at 40 CFR Part 280.41(a).

The general premise of the EPA's release detection requirements is that frequent sampling improves the chances of finding leaks and limits the length of time over which leaks can progress unchecked. Tanks must be monitored at least monthly unless the owner or operator chooses an option that includes less frequent tank tightness testing in combination with monthly inventory control. Inventory control (such as using a dipstick to measure product level in a tank) does not by itself meet the requirements for "monthly" monitoring and must be combined with periodic tightness testing. After considering the input of numerous commenters, the EPA determined that a monthly tank monitoring interval would provide adequate environmental protection without being unduly burdensome. Thus, monthly monitoring is the release detection baseline for all new and existing petroleum UST systems.

Frequent tank tightness testing is not practical because it often requires extensive preparation, including a shutdown of operations. However, it is a sensitive method which, when done properly, can provide very accurate results. Manual inventory control (dipsticking) is less sensitive but can provide nearly continuous leak detection that can reliably detect larger releases. The combination of the two techniques helps compensate for each component's disadvantages.

In addition to the other release detection methods allowed under the rule, weekly manual tank gauging is permitted for tanks with a capacity of 1,000 gallons or less. An EPA study found that weekly tank gauging can detect leaks

as small as 0.2 gallons per hour with reasonable assurance for smaller tanks. This method, which involves selecting a specified "down-time" (which relates to tank size), such as a weekend during which no product is added to or withdrawn from the tank, is particularly effective for tanks storing used oil. It is reasonable to allow this option for smaller tanks with less rapid turnover of product because it is simple to implement, is cost-effective, and provides the same level of protection as other monthly monitoring methods for these smaller tanks.

This part of the rule also reflects the importance of preventing and rapidly detecting piping releases. The basis for this in the EPA rule is at 40 CFR Part 280.41(b). Pressurized piping must have a release detection device that monitors the line continuously and automatically shuts off or restricts product flow or sounds an alarm when there is an indication of a leak. The owner and operator must also conduct either monthly monitoring or an annual line tightness test. The monthly monitoring may include vapor monitoring, ground water monitoring, interstitial monitoring or other methods that meet the performance standard or are approved by the MPCA. Performance standards for piping release detection methods are contained in part 7150.0340 and are discussed below. For pressurized systems, one release detection method can be used as the sole method if it can meet both the hourly release detection requirement and the annual or monthly release detection requirements. For example, double-walled piping with continuous interstitial monitoring that meets the performance standard is an acceptable option for pressurized piping and would not require shutoffs, restrictors, or tightness tests. However, such a system would have to be equipped with an alarm that will indicate when a release to the interstitial space has begun.

Suction piping systems meeting the "no leak" criteria described below are exempt from release detection. Other suction systems must operate with monthly release detection or a line tightness test every three years. To meet the "no leak" criteria, suction piping must meet the following standards: 1) the below-grade piping must operate at less than atmospheric pressure; 2) the below-grade piping must be sloped so that the contents of the pipe will drain back into the tank if suction is released; 3) there may be only one check valve in each suction line and it must be located directly below and as close as practical to the suction pump; and 4) a method must be provided to allow compliance with the above to be determined (for example, the check valve must be readily inspectable).

Suction distribution systems are intrinsically safer than pressurized systems because product is transferred at less than atmospheric pressure by a pump near the dispenser drawing product from the tank by suction. System failures generally result in air or ground water flowing into the pipe rather than product being released during operation. Although the risk to the environment from operating a pressure distribution system is higher, such systems have the advantages of being highly efficient and not subject to vapor lock as with some suction systems. In summary, it is reasonable to allow operation of either suction or pressurized piping distribution systems as a part of UST system design, provided effective release detection is provided. The rule is structured to allow owner/operators several options for either system, recognizing the unique advantages and disadvantages of each.

Part 7150.0320 Requirements for Hazardous Material Underground Storage Tank Systems

Tanks storing hazardous materials as defined in proposed Minn. Rules pt. 7150.0030, subp. 24 must meet the release detection requirements for petroleum

UST systems described in part 7150.0310 by the dates established in part 7150.0300. The basis for this in the EPA rule is at 40 CFR Part 280.42(a). By the end of 1993, hazardous material UST systems require installation of monitoring which meets requirements that apply to new or upgraded petroleum UST systems. By the end of 1998 (the date by which all existing petroleum USTs must be upgraded to meet new petroleum UST standards) existing hazardous material USTs must be upgraded to meet standards for monitoring of new hazardous material USTs established by this part, as follows:

1) hazardous materials UST systems must have secondary containment which can contain materials released from the tank and piping until they are detected and removed, prevent their release to the environment at any time during the operational life of the system, and be checked for evidence of a release monthly;

2) double-walled tanks must be designed, constructed and installed to contain a release from any part of the inner tank within the outer wall and detect any failure of the inner wall;

3) external liners, including vaults, must be designed, constructed and installed to contain 100 percent of the capacity of the largest tank within its boundary, prevent the interference of precipitation or ground water intrusion with the ability to contain or detect a release, and surround the tank completely;

4) underground piping must be equipped with secondary containment and, if it conveys regulated substances under pressure, it must be equipped with automatic line leak detection;

5) other methods of release detection may be used if owner/operators can demonstrate that the alternate method is able to detect a release of the hazardous material as effectively as the methods allowed in part 7150.0330 can

detect a release of petroleum, can provide information to the MPCA on corrective action technologies, health risks, chemical and physical properties of the hazardous material and characteristics of the UST site, and can obtain approval from the MPCA commissioner to use the alternate release detection method before beginning installation and operation.

Release detection and corrective action technologies are not as readily understood or widely used for the broad range of hazardous materials as they are for petroleum. It is reasonable that a more conservative approach, such as secondary containment, be applied to UST systems storing hazardous materials. The proposed rule does allow for owner/operators to use alternate methods of release detection if sufficient documentation of performance is submitted to the implementing agency. The agency will then use these factors to guide its decision on whether to allow the alternate release detection method for the hazardous material being stored.

From the technical perspective, secondary containment is desirable because it ensures that all USTs storing hazardous materials will be provided with effective detection methods and, if a release occurs from the primary containment structure to the interstitial space, corrective action will be simplified because it is very unlikely to impact the surrounding environment. The EPA allowed single-walled tanks and release detection for storage of petroleum because of its relative ease of detection and the belief that small releases could be cleaned up relatively easily. Information about the performance of release detection and corrective action methods for hazardous materials is not as readily available. More importantly, there is limited field experience with detection methods for hazardous material tanks. Many hazardous materials are more toxic than petroleum and may be less likely than petroleum to

be detected by taste or odor. When replacing hazardous material tanks, industry has generally chosen to put them aboveground, in vaults, or in double-walled tanks.

In summary, the approach to regulating storage of hazardous materials in USTs is similar to that taken with regard to storage of hazardous wastes under 40 CFR Parts 264 and 265 (1989)(Subtitle C of RCRA). The performance-oriented approach to monitoring hazardous material USTs is intended to provide enough flexibility to control the greater number and variety of hazardous material tanks without the use of a permitting program, while at the same time providing a similar level of protection as mandated by the tank requirements under Subtitle C of RCRA.

Part 7150.0330, Methods of Release Detection for Tanks

The proposed rule recognizes eight acceptable methods of release detection for the UST part of the tank system. These are, in the order they appear in the rule: inventory control, manual gauging, tightness testing, automatic gauging, vapor monitoring, ground water monitoring, interstitial monitoring, and other approved methods. Each method is discussed in more detail below. The basis for this in the EPA rule is at 40 CFR Part 280.43.

1) Product inventory control. Product inventory control must be used in conjunction with tank tightness testing because neither method alone meets the requirements for release detection for tanks. Inventory control is like balancing a checking account. Every month the product volume is balanced between what is delivered and what is sold from the tank with daily measurements of tank volume taken with a gauge stick. If the "account" does not balance, the tank may have a leak. UST inventories are determined in the morning and in the evening or after each shift by using a gauge stick and the data is recorded on a ledger form. The level on the gauge stick can be converted to a volume of

product in the tank using a calibration chart, which is often furnished by the UST manufacturer. The amounts of product delivered to and withdrawn from the tank each day are also recorded. At least once each month, the gauge stick data and the sales and delivery data are reconciled and the month's overage or shortage is recorded. If the overage or shortage is greater than or equal to 1.0 percent of the tank's flow-through volume plus 130 gallons of product, the UST may be leaking.

In addition to the above, the following requirements apply. Inventory control must be used in conjunction with periodic tank tightness testing. Refer to proposed Minn. Rules pt. 7150.0310. The gauge stick should be long enough to reach the bottom of the tank and marked so that the product level can be determined to the nearest one-eighth of an inch. A monthly measurement must be taken to identify any water at the bottom of the tank. Deliveries must be made through a drop tube that extends to within one foot of the tank bottom. Finally, product dispensers must be calibrated to standards for meter calibration adopted by the Minnesota Department of Public Service, Division of Weights and Measures at part 7600.6800 (1990).

The above requirements are reasonable and necessary to enable UST owners to conduct accurate and reliable inventory control and, when combined with tank tightness testing, to provide effective leak detection. EPA studies determined that when the monthly criteria of 1.0 percent of the tank's flow-through plus 130 gallons is applied to product inventory control, the false alarm rate is about 5 percent. In other words, 5 times out of 100, exceedance of the criteria would indicate that a release had occurred when, in fact, it had not. This is within the same accuracy level as the other release detection methods described below.

2) Manual tank gauging. Manual tank gauging can be used only for smaller tanks. Tanks up to 1,000 gallons in size can use this method alone, but tanks with capacities from 1,001-2,000 gallons can use manual tank gauging only when it is combined with tank tightness testing. Manual tank gauging cannot be used for tanks over 2,000 gallons in size, although EPA research in this area has shown that the method may be effective for larger tanks but with decreasing accuracy. To conduct manual tank gauging, four liquid level measurements must be taken weekly, two at the beginning and two at the end of at least a 36-hour period during which nothing is added to or removed from the tank. The average of the two consecutive ending measurements is subtracted from the average of the two beginning measurements to indicate the change in product volume. Every week, the calculated change in tank volume is compared to the values in a standards table which is based on tank capacity. If the calculated change exceeds the weekly standard, the UST may be leaking. Monthly averages of the four weekly test results must be compared to the monthly standard in the same way.

It is reasonable to allow manual tank gauging as an option for smaller tanks because it is straightforward, inexpensive, and achieves the same degree of accuracy as other methods. For tanks smaller than 1,000 gallons, manual tank gauging can detect a 0.2 gallon per hour release with a probability of detection of 0.95 and a probability of false alarm of 0.05. For tanks with capacities between 1,001 and 2,000 gallons, the method achieves the performance of inventory control. Therefore, it is reasonable for owners of these tanks that they meet the inventory control requirements by supplementing manual tank gauging with periodic tank tightness testing.

3) Tank tightness testing. Tank tightness testing (or another test of equivalent performance) must be capable of detecting a 0.1 gallon per hour leak

rate from any part of the tank that routinely contains product while accounting for the effects of thermal expansion or contraction of the product, vapor pockets, tank deformation, evaporation or condensation, and the location of the water table. Probabilities of detection and false alarm as described in part 7150.0300 also apply.

Of all the allowable methods of release detection, tank tightness testing (also called precision testing or volumetric testing) may be the most technically complex. The premise of a volumetric tank test is that any change in the volume of liquid in a tank can be interpreted as a leak. Detection of these leaks is difficult because there are many physical factors which produce volume changes that can be mistaken for leaks. While acknowledging the uncertain performance of tank testing, the EPA believed that it was a demonstrated and effective method that would be available to meet the large demand for release detection following promulgation of the rule. The EPA considered the issue of tank testing performance important enough that it established a test facility in Edison, New Jersey to "test the testers." During 1986 and early 1987, manufacturers of 25 of the 43 commercially available tightness testing systems participated in an evaluation of their systems at the Edison laboratory. The details of the testing protocols and results of the program have been described in detail in publications by the EPA and contractors the EPA hired to complete certain portions of the work.

Many of the volumetric tank tests on the market today claim the ability to detect leaks as small as 0.05 gallons per hour. This is the "practice" recommended by the National Fire Protection Association (NFPA) in NFPA Bulletin 329. The results of the Edison testing showed that most existing volumetric methods will detect 0.05 gallon per hour leaks at least a portion of the time. The problem with the NFPA criterion is that it does not specify the probability

with which the 0.05 gallon per hour leak rate must be detected. As such, the confidence level associated with this leak rate is unknown. After extensive research, the EPA chose to establish a performance standard for volumetric tank testing of 0.1 gallon per hour with a probability of detection of 95 percent and a probability of false alarm of 5 percent. In effect, the EPA acknowledges the uncertainty inherent in volumetric testing and in setting the probabilities of detection and false alarm, says that five times out of 100 tests of the same tank, the results of the test can be incorrect (the tank declared tight when it is leaking and vice versa) and the standard is still met. This is the main reason why tightness testing must generally be combined with inventory control methods to meet the release detection requirement and why the EPA set a time limit for use of this method as a means of release detection. Refer to part 7150.0300.

Comparison to the EPA's performance standard shows that the NFPA criterion would allow more leaks to go undetected and also cause more false alarms. The EPA's final performance standard is intended to eliminate the use of poor tightness test methods, ensure that more leaks are detected, and cause fewer false alarms. It is reasonable in that it provides for better protection of human health and the environment while ensuring that unnecessary burdens on owners, operators and implementing agencies are minimized.

4) Automatic tank gauging. Automatic tank gauges are sized to specific tanks and are permanently mounted through one of the tank bung holes. The product level and temperature are measured continuously and automatically analyzed and recorded by a computer. In the inventory mode, the automatic gauge replaces the use of the gauge stick to measure product level and perform inventory control. This mode records the activities of an in-service tank,

including deliveries. In the test mode, the tank is taken out of service and the product level and temperature are measured for at least one hour.

Automatic tank gauges must be able to detect a leak at least as small as 0.2 gallons per hour with a probability of detection of 95 percent and a probability of false alarm of 5 percent. This represents a standard which current equipment can generally meet. Since the product level test is conducted at least monthly, the performance of this method can statistically equal or exceed the sensitivity achieved by periodic tank testing, even though the monthly performance standard is less stringent. Inventory control is still required in conjunction with product level monitoring using this method since product level monitoring alone using automatic gauging is not as sensitive as tightness testing or some of the external methods discussed below. This requirement is not burdensome because automatic gauges routinely collect the information needed to conduct inventory control.

5) Vapor monitoring. Vapor monitoring measures vapors from leaked product in the soil around the tank to determine if the tank is leaking. Fully automated vapor monitoring systems have permanently installed equipment to continuously gather and analyze vapor samples and respond to a release with a visual or audible alarm. Manually operated vapor monitoring systems range from equipment that immediately analyzes a gathered vapor sample to devices that gather a sample that must be sent to a laboratory for analysis. Manual systems must be used at least once a month to monitor a site.

Part 7150.0330 uses the term "vapor monitoring point" instead of "monitoring well" used at 40 CFR Part 280.43 in order to distinguish these points from wells which monitor for liquids on the ground water which must meet the provisions of Minn. Rules ch. 4725 (1990) and requirements discussed below under "Ground Water Monitoring." High ground water conditions can interfere with proper operation

of vapor monitoring points. If high ground water is a factor at the UST site (less than 20 feet from the surface), monitoring wells should be installed rather than vapor monitors, assuming the site meets the other conditions for monitoring well installation.

Regulatory requirements for installation of vapor monitoring points are as follows. The UST backfill must be sand, gravel or another material that will allow the vapors to easily move to the monitor. The backfill should be clean enough so that previous contamination does not interfere with the detection of a current leak. The substance stored in the UST must vaporize easily so that the vapor monitor can detect a release. High ground water, excessive rain, or other sources of moisture must not interfere with the operation of vapor monitoring for more than 30 consecutive days. The UST site must be assessed to ensure compliance with the preceding requirements to establish number and positioning of vapor monitoring points so that releases within the excavation zone from any part of the tank that routinely contains product will be detected. Finally, vapor monitoring points must be clearly marked and secured to prevent unauthorized access and tampering.

Although there are still not enough data to specify a more complete performance standard for this method (in terms of probability of detection, false alarm and leak rate), the method can be a very sensitive and effective monitoring tool, especially at "virgin" sites where previous contamination by petroleum hydrocarbons is not a factor. Vapors are often a good precursor of a release, moving ahead of the contaminant plume on the ground water. Early detection of vapors in these external monitors is straightforward, inexpensive, and can assist UST owner/operators in limiting corrective action costs.

6) Ground water monitoring. Ground water monitoring involves the use of one or more monitoring wells placed in the water table close to the UST. The

wells are checked at least monthly for the presence of product that has leaked from the UST and is floating on the ground water surface. The two main components of a monitoring well system are the well itself, typically two to four inches in diameter, and the monitoring device. Before installation, a site assessment is necessary to determine the soil type, ground water depth and flow direction, and the general geology of the site. Detection devices may be permanently installed in the well for automatic, continuous measurement of released product. Detection devices are also available in manual form. Manual devices range from a bailer (used to collect a liquid sample for visual inspection) to a device that can be inserted into the well to electronically indicate the presence of leaked product. Manual devices must be operated at least once a month.

Ground water monitoring wells must be installed and tested according to provisions of the Minnesota Water Well Construction Code, Minn. Rules ch. 4725 (1990), as well as the following requirements. Ground water monitoring can only be used if the stored substance does not easily mix with water and floats on top of water. If ground water monitoring is to be the sole method of leak detection, the ground water must not be more than 20 feet below the surface and the soil between the well and the UST must be sand, gravel or other coarse materials. Wells should be placed in or very near to the UST backfill so that they can detect a leak as quickly as possible. Product detection devices must be able to detect one-eighth inch or less of leaked product on top of the ground water. Wells must be designed and placed based on a site assessment and sealed to keep them from becoming contaminated from outside sources. Well screens must be designed to prevent migration of natural soils or filter pack into the well and to allow the entry of the regulated substance on the water table into the

well under both high and low water table conditions. Finally, wells must be clearly marked and secured.

The primary concern with ground water monitoring is that the resource being protected is the medium in which the release is detected. However, the method is in widespread use and, if properly designed and implemented, can successfully detect small releases. The one-eighth inch detection requirement was selected as a performance standard because it represents the sensitivity of existing automated equipment, not because it is an acceptable release. As with vapor monitoring, ground water monitoring has proven its worth as an effective and inexpensive method of external monitoring which can provide owner/operators with early detection and help reduce corrective action expenses.

7) Interstitial monitoring. Interstitial monitoring is required for hazardous material USTs with secondary containment systems. Secondary containment is currently an option for use with petroleum USTs. Secondary containment provides a barrier between the tank and the environment. The barrier holds released product between the tank and the barrier long enough for the release to be detected. Barriers include double-walled tanks in which an outer tank partially or completely surrounds the primary tank, leakproof excavation liners (but not clay or other earth materials alone) that partially or completely surround the tank, leakproof liners that closely surround the tank ("tank jackets"), and concrete vaults.

Monitors are used to check the area between the tank and the barrier for evidence of a release and alert the operator if a release is suspected. Some monitors indicate the physical presence of the released product, either liquid or gaseous. Others check for a change in condition that indicates a hole in the tank, such as a loss of pressure or a change in the level of an indicator liquid between the walls of a double-walled tank. Monitors can be as simple as a

dipstick used at the lowest point of the containment to see if product has leaked and pooled there. Monitors can also be automated systems that continuously check for evidence of a release.

To use the interstitial monitoring option, the barrier must be immediately around or beneath the tank, the monitor must be checked at least monthly, and the barrier if a double-walled system must be able to detect a release through the inner wall. If an excavation liner is used for secondary containment, it must: direct a release toward the monitor; not allow stored product to pass through it any faster than 10(-6) centimeter/second; be compatible with the stored product; not interfere with the cathodic protection system of a steel UST; not be disabled by moisture; always be above the ground water and the 25-year flood plain; and, have clearly marked and secured monitoring wells and vapor monitoring points if they are used. Although initially this may appear to be a somewhat lengthy and restrictive list of conditions, most interstitial monitoring systems for secondary containment already meet these requirements. Correct installation may be fairly difficult, especially for "custom-designed" secondary containment systems. However, once in place, secondary containment with interstitial monitoring is a highly reliable, inexpensive system to maintain. Of all the monitoring options discussed, it is probably most likely to provide early detection of a release and thus minimize corrective action costs.

8) Other approved methods. As is the approach elsewhere in the proposed rule, flexibility is provided to owner/operators who can demonstrate to the implementing agency the effectiveness of alternate compliance methods that meet certain performance standards. Here the established performance standard is similar to the one used for automatic tank gauging (see above). The alternate method must detect a 0.2 gallon per hour leak rate or a release of 150 gallons

within a month with a probability of detection of 0.95 and a probability of false alarm of 0.05. The MPCA is requiring prior approval of the commissioner before implementation of an alternate method. The performance standard and prior approval should foster consistency among methods while offering additional flexibility for owner/operators who choose new or improved technologies of equivalent protection and helping to spur innovation.

Part 7150.0340, Methods of Release Detection for Piping

The general release detection requirements for pressure and suction lines are discussed under part 7150.0310 above. This section discusses performance standards for those release detection methods. The basis for this in the EPA rule is at 40 CFR Part 280.44. Methods which alert the operator to the presence of a release by restricting or shutting off the flow of the regulated substance through the piping system or by triggering an audible or visual alarm may be used only if they detect leaks of three gallons per hour at ten pounds per square inch (psi) line pressure within one hour. An annual test of the operation of the leak detector must be conducted according to the manufacturer's requirements. A periodic test of piping may be conducted only if it can detect a 0.1 gallon per hour leak rate at one and one-half times the operating pressure. In addition, other methods of release detection such as vapor monitoring or ground water monitoring may be used if they are designed to detect a release from any part of the underground piping that routinely contains regulated substances.

The performance standard for automatic piping release detection methods including flow restrictors, shutoff devices, and interstitial or external monitors, were selected based on a study by the EPA of the behavior of pressurized lines and manufacturer's written claims. The value of 10 psi was also selected because it is the pressure at which a typical line leak detector

operates. Automatic line leak detectors must be capable of checking for releases hourly and either restrict or shutoff flow of product or be equipped with an audible or visual alarm. The hourly detection frequency was selected because pressurized lines can release large volumes of product quickly, so very frequent monitoring is necessary during operation to protect public health and the environment. Most pressurized line monitoring equipment in use currently meets these requirements, so implementation will not be difficult.

Work conducted at the EPA's Edison test laboratory has demonstrated that line tightness test methods will meet the 0.1 gallon per hour performance standard. Performance standards for line release detection must be stated in terms of line operating pressure. The value of 1.5 times the operating pressure was chosen for the line tightness test because most operators are currently performing tightness tests at this pressure, it is the procedure recommended by NFPA Bulletin 329 for hydrostatic testing, and it covers the range of line operating pressures, including suction lines. For safety reasons, all line tightness tests should be performed at positive pressure, not a vacuum. For example, most suction lines operate at 3 to 5 psi negative pressure; tightness tests should be conducted at about 7 psi positive pressure.

Part 7150.0350, Release Detection Record Keeping

Part 7150.0240 describes general record keeping requirements for UST facilities. This part provides details of specific record keeping for release detection systems. The basis for this in the EPA rule is at 40 CFR Part 280.45. The proposed rule addresses four areas where release detection record keeping is necessary. The EPA requirements allow the implementing agency to establish time periods during which records must be kept. The MPCA believes record keeping to be a very important part of regulatory compliance since the emphasis of the rule is on self-monitoring and the large number of UST sites prohibits site

inspections for all but a few representative facilities. The areas of release detection record keeping and length of time they must be kept are as follows:

1) Written performance claims pertaining to any release detection system used and the manner in which these claims have been justified or tested by the equipment manufacturer or installer must be maintained as long as the system is being used to comply with the requirements of the rule.

2) Results of any sampling, testing, or monitoring must be maintained for ten years.

3) Written documentation of calibration, maintenance and repair of release detection equipment permanently located on-site must be maintained for ten years after servicing is completed. Schedules of required calibration and maintenance provided by the release detection equipment manufacturer must be maintained for as long as the system is being used to comply with the requirements of the rule.

4) Documentation of the commissioner's approval of alternate release detection methods under part 7150.0330 must be maintained.

The MPCA has learned from the investigation of over 3,000 tank release sites in recent years that a documented record of operation is important in determining when releases occurred, who responsible persons are, and the extent to which operational practices may have contributed to or helped mitigate a release. If records are missing or incomplete, considerable staff time and state resources can be spent in trying to unravel the history of operation of a release site. The MPCA believes that the documentation required and the time frames established are both necessary and reasonable.

Out-of-Service Underground Storage Tank Systems and Closure

Part 7150.0400, Temporary Closure

The principal objective of the UST system closure requirements is to identify and contain existing contamination and to prevent future releases from UST systems no longer in service. UST systems improperly closed in the past have had undetected releases that later required corrective action. Because many existing UST systems are expected to close in the next five to ten years, it is particularly important to require proper management procedures for out-of-service UST systems so that contamination due to improperly closed UST systems can be prevented from posing a threat of additional future releases and needed corrective action can be identified and taken. The basis for this in the EPA rule is at 40 CFR Part 280.70.

Subpart 1. The Minnesota Uniform Fire Code (Minn. Rules ch. 7510 (1990)) incorporates the National Uniform Fire Code by reference. The national code in Section 79.113 (Abandonment and Status of Tanks) contains certain requirements for tank closure which are similar to the requirements of this subchapter. Subpart 1 makes clear that owner/operators must comply with the fire code requirements in the area of temporary closure of UST systems.

Subpart 2. Operation and maintenance during temporary closure. When an UST system is temporarily closed, owners and operators must continue operation and maintenance of corrosion protection and release detection systems. Release detection is not required as long as the UST system is empty. For purposes of temporary closure, an UST system is considered empty when all materials have been removed using commonly employed practices (such as pumping) so that no more than 2.5 centimeters (one inch) of residue, or 0.3 percent by weight of the total capacity of the UST system, remain in the tank. For the purposes of temporary closure, the term "empty" is defined by incorporating the

definition of "empty container" set forth in EPA regulations under Subtitle C of RCRA. This definition should be adequate to ensure that regulated substances remaining in a temporarily closed tank will not pose an unreasonable risk to human health and the environment if a release occurs during the temporary closure period. Note that to permanently close a tank (part 7150.0410, below) owners and operators must empty and clean it by removing all liquids and accumulated sludges.

Subpart 3. Tanks out of service 90 days. When an UST system is temporarily closed for 90 days or more, owners and operators must also leave vent lines open and functioning and cap and secure all other lines, pumps, passageways and ancillary equipment. It is important for safety reasons that even a tank which is temporarily empty of product have vent lines open and functioning so that vapors will not accumulate within the tank and cause a fire or explosion hazard. At the same time, other tank openings which may not otherwise be protected, such as fill lines, must be capped and secured to prevent unauthorized access and tampering.

Subpart 4. Tanks out of service one year. When an UST system is temporarily closed for more than 12 months, owners and operators must permanently close the system if it does not meet either performance standards in part 7150.0100 for new UST systems or upgrading requirements in part 7150.0110, except that spill and overfill equipment requirements do not have to be met. Permanent closure must meet the requirements of parts 7150.0410 to 7150.0440 unless the commissioner provides an extension of the 12-month temporary closure period. Before owner/operators can apply for such an extension, a site assessment must be conducted according to part 7150.0420. Since spilling and overfilling associated with product transfer should not be a problem around tanks which have been properly temporarily closed, UST systems are not required

to satisfy spill/overfill provisions for new and upgraded systems in order to be excluded from the 12-month closure provisions.

Part 7150.0410, Permanent Closure and Changes-in-Service to Storage of Nonregulated Substances

Subpart 1. Similar to subpart 1 under part 7150.0400 above, owners and operators must comply with provisions of the Minnesota Uniform Fire Code concerning permanent closure and changes-in-service. These provisions (referenced to Sec. 79.113(e) of the National Uniform Fire Code) are consistent with the requirements of subpart 3, below.

Subpart 2. Notice of closure or change in service. At least 10 days before beginning either permanent closure or a change-in-service under subparts 3 and 4, owners and operators must notify the commissioner of their intent to permanently close or make the change-in-service, unless such action is in response to corrective action. This subpart is similar to the advance notice for installation required by part 7150.0120, subpart 1. This is a reasonable requirement to enable the MPCA to schedule inspection of UST removals and coordinate technical assistance efforts with owners/operators, local authorities and others. The required assessment of the excavation zone under part 7150.0420 must be performed after notifying the commissioner but before completion of the permanent closure or a change-in-service.

Subpart 3. Permanent closure. To permanently close a tank, owners and operators must empty and clean it by removing all liquids and accumulated sludges. All tanks taken out of service permanently must also be either removed from the ground or filled in-place with an inert solid material. This is consistent with the federal rule at 40 CFR Part 280.71. The Division of State Fire Marshal has issued a policy statement (October 5, 1987) which states, in part: "Tanks removed from service for a period of one year are considered to be

abandoned and must be removed from the ground. Where tanks are located beneath significant structures, or in a legally established right-of- way, abandonment in place may be considered acceptable if approved by both the State Fire Marshal and the local authority. The two acceptable means of abandoning tanks in place are filling the tank with either a cement slurry or polyurethane foam. The tank must be completely filled with the inert substance." The MPCA supports this policy from an environmental perspective, believing that tanks abandoned in place should require a site assessment. Complete removal allows the excavation as well as the tank itself to be inspected for signs of leakage. Removal also facilitates soil sampling. Filling in-place will normally require a soil boring rig to be brought in to obtain environmental samples (see part 7150.0420, below) at increased cost to the tank owner/operator.

Subpart 4. Storage of nonregulated substances. Continued use of an UST system to store a nonregulated substance is considered a change in service and must be reported to the MPCA in accordance with Minn. Stat. § 116.48, subd. 3 (1990) and part 7150.0120 of this proposed rule. Before a change in service, owners and operators must empty and clean the tank by removing all liquid and accumulated sludge and conduct a site assessment according to part 7150.0420. This subpart will prevent sound tanks from being forcibly discarded, even though this will serve no environmental purpose. At the same time, it will help assure that such changes in service are not made unless the tank is clean and a site assessment has been made.

Subpart 5. Certified removers. Owners and operators must ensure that persons performing permanent closures under subpart 3 or changes in service under subpart 4 are in compliance with certification requirements imposed by the MPCA under Minn. Stat. § 116.491 (1990) and Minn. Rules ch. 7105 (State Register, January 8, 1990) certified removers must furnish copies of

certificates issued by the MPCA to the owner/operator prior to beginning work. These requirements will help ensure that persons removing USTs are qualified to do so by having received training and certification to perform closure work and that owners/operators are aware of their qualifications.

Subpart 6. Tank system closure certification. Owners and operators must ensure that the person who removes or otherwise closes an UST system certifies on the notification form that the methods used to close or otherwise remove the tanks and piping comply with part 7150.0410, subparts 3 to 5. This requirement is similar to those of part 7150.0120, subparts 4 and 5, which apply to certification of UST systems by installers and repairers.

Subpart 7. This subpart merely indicates that cleaning and closure procedures listed in the referenced documents must be used as guidance in complying with this part.

Part 7150.0420, Assessing the Site at Closure or Change in Service

When removing or closing a tank or making a change in service to storage of a nonregulated substance, owners and operators must measure through laboratory analysis, for presence of a release where contamination is most likely to be present at an UST site. The federal rule, as set forth in 40 CFR Part 280.72, specifies the barest minimum requirements needed to characterize contamination at an UST site. The MPCA has specified how measurements of site soils and/or ground water must be made to give owners and operators some idea of what is an acceptable procedure for site assessment at closure. The MPCA guidance document, "Sampling Requirements During Tank Closure" elaborates on this procedure. It is the MPCA's position that measurements of site characteristics using field instruments (such as a photoionization detector to measure for presence of petroleum vapors in an excavation) can be a useful tool but are not substitutes for laboratory analyses.

If contaminated soils, contaminated ground water, or free product as a liquid or vapor is discovered by this measurement or by any other manner, owners and operators must notify the agency immediately and begin corrective action according to Minn. Stat. § 115.061. It is reasonable that the criteria for initiating corrective action during closure activities should be the same as the criteria for initiating corrective action at any other time during the operational life of an UST system.

In selecting sample types, sample locations, and measurement methods, owners and operators must consider such site-specific variables as the method of closure, the nature of the stored substance, the type of backfill, the depth to ground water, and other factors appropriate for identifying the presence of a release. The requirements of this subpart are also satisfied if one of the external monitoring methods allowed in part 7150.0330, items F and G, is operating according to the rule at the time of closure and indicates no release has occurred. Since most older UST sites which have not been upgraded will not have this instrumentation, soil and/or ground water monitoring within the UST excavation zone will generally be required as a part of proper closure. The purpose of the site assessment is directed more at showing the site is "clean" than to prove that a release has occurred. Often it is possible to confirm a release by examining the tank condition or visually assessing the excavation zone for stained soils, unusual odors, a petroleum sheen on the ground water, and so on.

Part 7150.0430, Applicability to Previously Closed Underground Storage Tank Systems

When directed by the MPCA commissioner, the owner and operator of an UST system permanently closed before December 22, 1988, must assess the excavation zone and close the UST system according to part 7150.0420 if releases from a

previously closed UST may, in the judgment of the commissioner, pose a current or potential threat to human health and the environment. The MPCA and the EPA have documented cases where previously closed UST sites have been the source of releases which have later contaminated the environment. An EPA examination of state UST program incident reports between 1970 and 1984 revealed approximately 300 releases that implicated abandoned UST systems. Because there is a reasonable probability that releases from such tanks may pose a threat to human health and the environment, the application of the closure provisions to these tanks, and in particular the site assessment requirements, is necessary and appropriate.

Part 7150.0440, Closure Records

Owners and operators must maintain records according to part 7150.0240 (refer also to 40 CFR Part 280.34 and 40 CFR Part 280.74) that are capable of demonstrating compliance with the closure requirements. The results of the excavation zone assessment required in part 7150.0420 must be maintained for at least three years after completion of permanent closure or change in service. Records may be kept by the owners and operators who took the UST system out of service, by the current owners and operators of the site, or (as in the case of a site no longer in existence) by mailing the records to the commissioner if they cannot be maintained at the closed facility.

As has been indicated previously, site records are one of the primary means of reconstructing the history of an UST site and may be invaluable should a closed site later become the source of an environmental problem or if an adjoining site should have a release which would need to be investigated. Owner/ operators may need to produce these records as a means of helping to limit their own liability in the case of future UST release investigations.

Part 7150.0500, Incorporation by Reference

This part lists those documents that are incorporated by reference in the proposed rule. This part is reasonable because it informs those persons affected by the rules that these documents can be found in the State of Minnesota Law Library, as well as providing an address where they can be obtained. Because these documents can be subject to frequent change, this is also indicated to alert individuals of this fact and to inform them that amendments to these documents are also incorporated by reference.

The legislature has indicated its approval of this approach in Minn. Stat. § 645.31, subd. 2 (1990), which states that a statute (or rule) that adopts another law by reference "also adopts by reference any subsequent amendments of such other law, except where there is clear legislative intention to the contrary." By only adopting those amendments to the industry codes and standards which are adopted by the substantive federal or state laws, the rule falls within the limits of what the legislature has explicitly approved in § 645.31. The Minnesota Supreme Court has twice in recent years acknowledged that adoption of future amendments to standards being incorporated by reference is particularly appropriate when, as in this case, the goal is to coordinate state and federal requirements. Minnesota Recipients Alliance v. Noot, 313 N. W. 2d 584, 586-87 (Minn. 1981); Minn. Energy & Economic Dev. Auth. v. Printy, 351 N. W. 2d 319, 351-52 (Minn. 1984).

The preamble to 40 CFR Part 280 contains a discussion by the EPA concerning reliance on codes developed by nationally recognized organizations. The EPA did not receive any comments that were against or critical of the use of industry codes. The EPA's approach to the UST technical rule is to expand the use of and reliance on industry codes in order to provide for a means of improving existing methods or developing alternative methods of UST system management. The EPA

states in the preamble that they want to provide a flexible approach to codemaking by relying on nationally recognized organizations to develop new and improved codes and practices through a public process.

The EPA interprets a "nationally recognized organization" to mean a technical or professional organization that has issued standards formed by the consensus of its members. The organization should ensure consideration of all relevant viewpoints and interests, including those of consumers and existing or potential industry participants, and the resulting standards should be widely accepted and technically sound. Thus, any code developed by an organization should be based on a broad range of technical information, and performance criteria should be central elements of the resulting standards. Examples of such nationally recognized organizations which have codes and standards referenced in 40 CFR Part 280 as well as the proposed Minnesota rule include:

American Petroleum Institute (API)

Association of Composite Tanks (ACT)

National Association of Corrosion Engineers (NACE)

National Fire Protection Association (NFPA)

National Leak Prevention Association (NLPA)

Petroleum Equipment Institute (PEI)

Steel Tank Institute (STI)

Underwriters Laboratory (UL)

The federal Office of Management and Budget (OMB) has discussed regulatory codes and standards (OMB Circular A119, October 26, 1982). The OMB encourages the reliance on voluntary standards, commonly referred to as industry standards or consensus codes. The developers of such codes are called voluntary standards bodies and are defined by the OMB to include private sector, domestic, or

multinational organizations--such as nonprofit organizations; industry associations, professional and technical societies, institutions, or groups; and recognized testing laboratories--that plan, develop, establish, or coordinate voluntary standards. The EPA interpretation of the phrase "nationally recognized organization" is intended to encourage the development and use of voluntary standards.

V. SMALL BUSINESS CONSIDERATIONS IN RULEMAKING

Minn. Stat. § 14.115, subd. 2 (1990) requires the MPCA, when proposing rules which may affect small businesses, to consider the following methods for reducing their impact on small businesses:

1. the establishment of less stringent compliance or reporting requirements for small businesses;

2. the establishment of less stringent schedules or deadlines for compliance or reporting requirements for small businesses;

3. the consolidation or simplification of compliance or reporting requirements for small businesses;

4. the establishment of performance standards for small businesses to replace design or operational standards required in the rule; and

5. the exemption of small businesses from any or all requirements of the rule.

The proposed rules may effect small businesses as defined in Minn. Stat. § 14.115 (1990). However, the benefits of the rule in terms of protecting the environment and public health and safety are expected to be considerable as discussed in the Statement of Need. In development of 40 CFR Part 280, the EPA conducted a Regulatory Flexibility Analysis (required by 5 U. S. C. 601 et seq.)

describing the potential impact of the rule on small entities such as small businesses and small governmental jurisdictions. The purpose of the Regulatory Flexibility Act is to ensure that regulations do not impose unnecessary costs or other burdens on such entities. The EPA concluded that although the rule will have a significant impact on a number of small entities, it should not impose unnecessary costs or other burdens on such entities. A more detailed discussion of this study can be found in Exhibit 2.

The EPA divided businesses potentially affected by the rule into three categories: firms engaged in retail motor fuel marketing such as gasoline service stations, firms engaged in other businesses (general industry category), and local government entities. The EPA focused the emphasis of its analysis on the retail motor fuel marketing sector because 1) with few exceptions, firms in this sector must store the product in USTs because of public health and safety concerns from above ground fuel storage at such facilities; 2) about three-quarters of all retail motor fuel outlets are owned or operated by small businesses; and 3) the data base for this sector is reasonably accurate and captures the most severe small business impacts likely to occur as a result of the rule.

For the EPA analysis, small businesses in the retail motor fuel marketing segment are defined as firms with less than $4.6 million in annual sales and include all firms with only one or two outlets. Firms with $4.6 million in sales will typically have approximately $500,000 in assets and a net worth of about $250,000. The EPA estimates that in 1984, small businesses either owned or operated 72 percent of the 193,000 retail motor fuel outlets in the United States. To examine the potential economic impact of 40 CFR Part 280 on small businesses, the EPA estimated the rates at which existing firms in the retail motor fuel marketing sector would leave the industry with and without

regulations. The EPA estimated that these outlets have historically tended to exit the industry at a rate of 3 to 4 percent per year. The EPA concluded that if releases occur at the level estimated by previous analysis (see Statement of Need) and no revenue increases are possible for small businesses, this rate would increase to 6.2 percent per year, assuming "average" corrective action costs.

Local government entities of all sizes own USTs. In 1982, the typical municipality with a population less than 50,000 had general revenues of $1.7 million. The cost of replacing a single UST represents about 2 percent of the revenue of such a municipality, a significant expenditure that would have to be taken into account when planning. On the other hand, corrective action requiring cleanup of a dispersed plume could represent as much as 13 percent of the general revenues of such a community according to the EPA. In Minnesota, the Petroleum Tank Release Compensation Account (Petrofund) has been an important incentive in encouraging small businesses and local governmental units to report releases promptly and conduct corrective action for which they can be reimbursed.

At the state level during late 1989, an Interagency Study Group comprised of members from eight state agencies was assembled to address the issue of the impact of the UST regulations on small businesses. The report of this group (December 1989) identified several programs in place to assist retail petroleum marketers which are available from state government agencies (refer to Exhibit 3). In addition to the Petrofund, a new program of the State Fire Marshal Division to allow dispensing of petroleum products from aboveground storage tanks was identified. Also, the Department of Trade and Economic Development has a program to provide financial assistance to a limited number of small business operators desiring to expand their businesses.

Other observations of the study group include the following comments. Most of the retail petroleum marketing industry in greater Minnesota has already been affected by the EPA technical and financial responsibility requirements for USTs. Some businesses have closed or will close or stop selling gasoline. Some have incurred or will incur substantial equipment and cleanup costs. Others have found or will find expanded sales opportunities. The five- and ten-year EPA compliance schedules for leak detection and corrosion protection systems have been effectively compressed by the realities of the insurance market. Insurance companies have not been able to offer reasonably priced coverage for storage tanks in unknown condition. Usually, to obtain insurance coverage, businesses must be in compliance with the technical requirements. To a large extent, the Petrofund is now replacing pollution liability insurance coverage for small UST owners. (This should be even more evident as a result of the 1990 Minnesota State Legislature's action to bring the Petrofund in line with the limits of coverage in the federal financial responsibility requirements.)

In summary, the implementation of 40 CFR Part 280 in Minnesota to date has not had a more severe impact on small businesses here compared to other areas with similar economies or demographics. The Petrofund has been a major incentive for small businesses to report UST releases and take corrective action. Money otherwise spent on cleanups can be reimbursed and applied to the costs of upgrading to meet the UST technical standards. While the costs of implementation of the UST technical and corrective action standards will be significant and may be a temporary financial hardship for some small businesses, they will be more than offset over the ten-year implementation period in terms of protection of public health, safety, and the environment.

VI. CONSIDERATIONS OF ECONOMIC FACTORS

In exercising its powers, the MPCA is required by Minn. Stat. § 116.07, subd. 6 (1990) to give consideration to economic factors. The statute provides:

> In exercising all its powers the pollution control agency shall give due consideration to the establishment, maintenance, operation and expansion of business, commerce, trade, industry, traffic, and other economic factors and other material matters affecting the feasibility and practicability of any proposed action, including, but not limited to, the burden on a municipality of any tax which may result therefrom, and shall take of provide for such action as may be reasonable, feasible, and practical under the circumstances.

In proposing technical standards for UST owners and operators, the MPCA has given due consideration to available information as to any economic impacts the proposed rules would have. In development of 40 CFR Part 280, the EPA conducted an economic impact analysis for the general industry and marketing sectors having petroleum USTs and for firms having hazardous materials USTs (refer to Exhibit 2). The results of this analysis indicated that firms in the retail motor fuel marketing sector would be most adversely affected, for several reasons: they have a greater number of small firms that are more vulnerable to significant regulatory expenditures; regulatory expenditures in this sector are likely to be greater because motor fuel retail outlets generally have the greatest number of USTs per outlet; and firms in the retail motor fuel marketing sector do not, for the most part, have the option of closing their USTs and using alternative storage methods. The EPA's economic impact analysis reaches the following conclusions:

1. By ten years after the effective date of the EPA rule (December 22, 1998), 36 percent more small firms are projected to close under the final rule than in the base case (in the absence of further federal regulation).

2. Most economic impacts of the final rule occur in the first five years after its imposition.

3. Most closures of existing outlets are caused by corrective action expenses.

4. Were corrective actions to be performed in the base case as well as under the final rule, the EPA predicts that a higher percentage of outlets would survive under the final rule than in the base case.

No significant adverse economic impacts are anticipated to result from the adoption of 40 CFR Part 280 at the state level beyond those which may have already occurred nationally. There have been beneficial economic impacts from the implementation of 40 CFR Part 280 nationally and these should continue in Minnesota as well. UST manufacturers, monitoring equipment companies, tank testers, petroleum maintenance companies, UST installers, repairers and removers, and cleanup contractors have all benefited from the passage of the federal law in Minnesota. By increasing the technical expertise and environmental awareness of tank service people and UST owner/operators, there should be fewer releases to the environment in the future, resulting in economic benefits to public health, safety and the environment. While the short-term impact of the rule on some small businesses may be significant, the rule should result in long-term cost savings to municipalities, small businesses and the general public as a whole.

VII. CONCLUSION

Based on the foregoing, the Minn. Rules pts. 7150.0010 to 7150.0500 are both needed and reasonable.

VIII. LIST OF EXHIBITS

The agency is relying on the following documents to support these proposed rules:

Agency Ex. No.	Title
1	Federal Register, Vol. 52, No. 74, Pages 12662-12769, April 17, 1987.
2	Federal Register, Vol. 53, No. 185, Pages 37082-37194, September 23, 1988.
3	Interagency Study Group Report, Underground Storage Tank Issues, Report to Commissioner Perpich, Department of Public Safety, December 1989.

Dated: January 10, 1991

Barbara Lindsey Sims

Commissioner