

STATE OF MINNESOTA

MINNESOTA POLLUTION

COUNTY OF RAMSEY

CONTROL AGENCY

In the Matter of the Proposed  
Amendment to Rules Governing  
the Management of Hazardous  
Waste (6 MCAR §§ 4.9001 - 4.9005  
and 4.9008 - 4.9010 to be  
Renumbered as 6 MCAR §§ 4.9100 -  
4.9560)

STATEMENT OF NEED  
AND REASONABLENESS

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## I. INTRODUCTION

The subject of this proceeding is the revision of eight existing rules of the Minnesota Pollution Control Agency (hereinafter "Agency" or "MPCA") governing generators of hazardous waste, the management, identification, and transportation of hazardous waste, hazardous waste treatment, storage and disposal facilities, and the operation of county hazardous waste programs, 6 MCAR §§ 4.9001 - 4.9005 and 4.9008 - 4.9010 (to be renumbered as 6 MCAR §§ 4.9100 - 4.9560). These rules are proposed for amendment pursuant to the Agency's authority under Minn. Stat. § 116.07, subd. 4 (1982 as amended by 1983 Minn. Laws, ch. 373, § 44) and Minn. Stat. § 116.07, subd. 4b (1982).

Rulemaking on the proposed rules was authorized on September 27, 1983. The proposed amendments to the hazardous waste rules were divided into two packages for purposes of rulemaking. The proposed rules to the sections governing owners and operators of hazardous waste treatment, storage and disposal facilities were the subject of one proceeding. The proposed amendments to the rules relating to definitions, the identification and classification of hazardous waste, the standards applicable to generators and transporters of hazardous waste and the operation of county hazardous waste programs were the subject of a separate rulemaking proceeding.

At the same time it authorized the initiation of rulemaking, the Agency found that the proposed amendment of the rules was non-controversial in nature and directed that the rulemaking proceedings be conducted in accordance with statutory provisions governing the adoption of noncontroversial rules, Minn. Stat. §§ 14.21 - 14.28 (1982). A Notice of Intent to Adopt rules Without a Public Hearing for each set of proposed amendments was mailed to all individual and organizations on the Agency mailing list and was published in the State Register on October 24, 1983 (8 S.R. 732 and 811). In response to these notices the Agency received more than seven requests for a hearing on each set of amendments. Therefore, pursuant to Minn. Stat. § 14.25 (1982), the provisions of Minn. Stat. §§ 14.13 - 14.20 are applicable to these proceedings.

In addition to the hearing requests the Agency received numerous comments on both sets of proposed amendments. On December 20, 1983, the Agency amended the proposed amendments to incorporate some of the changes suggested by the comments and to make other clarifying, grammatical and technical changes. At that meeting the Agency also authorized a consolidated rulemaking proceeding with respect to the proposed amendments.

A hearing on the consolidated amendments has been scheduled for 10:00 a.m. on February 6, 1984. A Notice of Hearing was mailed to all individuals and organizations on the Agency's mailing list on December 29, 1983 and published in the January 2, 1984

State Register (8 S.R. 1576). In accordance with the requirements of Minn. Stat. § 14.14 (1982) and 9 MCAR § 2.104 this Statement of Need and Reasonableness was prepared and completed 25 days prior to the commencement of the public hearing on the proposed amendments to the hazardous waste rules.

This Statement is divided into several parts. Part II. provides an overview of the proposed amendments. Part III. provides a discussion of the legal and historical background to the Agency's hazardous waste rules and the proposed amendments thereto. Part IV. contains the Agency's explanation of the need for the proposed revisions. Part V. contains the Agency's explanation, by chapter, of the reasonableness of the proposed revisions. Pursuant to the requirements of Minn. Laws 1983, ch. 188, entitled "Small Business considerations in Rulemaking," Part VI. documents how the Agency has considered the methods for reducing the impact of the proposed amendments on small businesses. Part VIII. contains a list of the exhibits relied on by the Agency to support the proposed amendments. The exhibits are available for review at the Agency's offices at 1935 West County Road B-2, Roseville, Minnesota 55113

## II. OVERVIEW OF THE PROPOSED AMENDMENTS

The Agency is proposing to amend the existing hazardous waste rules in several respects. The existing rules have sections relating to the identification and classification of hazardous waste, to the standards applicable to generators and transporters of hazardous

waste and to the requirements for owners and operators of hazardous waste facilities. The proposed rules which are the subject of this proceeding make amendments to the sections relating to definitions, the identification and classification of hazardous waste, the standards applicable to generators and transporters of hazardous waste and hazardous waste treatment, storage and disposal facilities and the operation of county hazardous waste proceedings.

The revised rules have been divided into nine chapters. Rules 6 MCAR §§ 4.9100 - 4.9104 in Chapter One address the general provisions of the rules. These provisions include the definitions applicable to the hazardous waste rules, procedural matters relating to variances and to petitions to delist a waste or to utilize an alternative testing method, and methods of obtaining material referenced in the rules.

Chapter Two, 6 MCAR §§ 4.9128 - 4.9137, establishes the criteria for determining whether a waste is hazardous and identifies specific wastes and waste streams which are hazardous. The provisions relating to the identification of hazardous waste utilize criteria for classifying wastes due to characteristics and the lists of hazardous waste found in the EPA regulations. These rules also set forth the standards for the management of mixtures of hazardous and nonhazardous wastes, for the management of wastes which are to be beneficially used, reused, recycled or reclaimed and for the management of residues of hazardous waste in empty containers and inner liners.

The standards applicable to generators of hazardous waste are contained in Chapter Three, 6 MCAR §§ 4.9200 - 4.9222. Pursuant to these provisions a generator is required to evaluate his wastes to determine if they are hazardous, file a disclosure and management plan with the Agency for each hazardous waste produced, and obtain an identification number. These rules also provide the requirements applicable to generators with regard to the use of manifests, accumulation of hazardous waste and record keeping. The special requirements applicable to small quantity generators are also set forth in this chapter.

Rules 6 MCAR §§ 4.9250 - 4.92599, Chapter Four, set forth the standards applicable to transporters of hazardous waste.

The standards governing the operation of hazardous waste facilities are set forth in Chapters Five, Six, and Seven. Chapter Seven, 6 MCAR §§ 4.9480 and 4.9481, provides operational standards for elementary neutralization units, pretreatment units, wastewater treatment units and combustion waste facilities. All other hazardous waste facilities are governed by Chapters Five and Six. Chapter Five, 6 MCAR §§ 4.9280 - 4.9316, establishes permanent requirements applicable to owners and operators of facilities which treat, store, or dispose of hazardous waste. These rules set forth requirements relating to the location of hazardous waste facilities, emergency procedures including personnel training and

contingency plans, record keeping requirements, closure requirements, and financial requirements as well as operational requirements for various types of facilities. Chapter Six, 6 MCAR §§ 4.9380 - 4.9422, establishes interim status standards for hazardous waste facilities which cover the same general areas as the permanent requirements. The interim status standards apply to existing facilities until final disposition of the owner or operator's permit application is made.

Chapter Eight, 6 MCAR §§ 4.9559 - 4.9560, establishes procedures for the Agency's overview of county hazardous waste programs.

### III. The Legal and Historical Background to the Hazardous Waste Rules and the Proposed Amendments Thereto

In 1974, the Minnesota Legislature directed the Agency to develop a state management plan and regulatory system for hazardous waste. 1974 Minn. Laws, ch. 346. Minn Stat. § 116.07, subds. 2 and 4 (1976), provide that the Agency shall adopt standards for the identification, labeling, classification, storage, collection, treatment and disposal of hazardous waste and the location of hazardous waste facilities. 1/ Pursuant to this authority the Agency adopted 6 MCAR §§ 4.9001 - 4.9010 which became effective in July, 1979.

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1/ Minn. Stat. § 116.07, subd. 4, was amended by 1983 Minn. Laws, ch. 373 § 44 to explicitly provide that the Agency's authority to adopt rules also applies to generators of hazardous waste.



Minn. Rules 6 MCAR §§ 4.9001 - 4.9010 provide a cradle to grave regulatory system which governs the identification, labeling, classification, storage, collection, transportation, and disposal of hazardous wastes, the location of hazardous waste facilities and the operation of county hazardous waste programs. Specifically these rules provide a system for determining whether a waste is hazardous by use of a series of chemical characteristics. A generator is required to determine if any of his wastes are hazardous and, if they are, to develop a management plan for those wastes. The generator must file a disclosure with the Agency identifying the hazardous wastes which he produces and the management plan for those wastes. The rules provide a tracking system for hazardous waste shipments by use of a manifest. The manifest is prepared by the generator and follows the shipment until its final treatment or disposal. Generators are required to utilize only licensed transporters and permitted facilities for the storage, transportation, treatment, and disposal of hazardous waste. The rules also provide standards for the storage and transportation of hazardous waste and general standards for hazardous waste facilities.

During the same period that the State was developing its program, the management of hazardous wastes was also being reviewed at the federal level. The Resource Conservation and Recovery Act of 1976 (hereinafter "RCRA") was the first comprehensive federal effort to deal with the problems of hazardous waste. 42 U.S.C.

§§ 6901 et seq. Subtitle C directed the United States Environmental Protection Agency (hereinafter "EPA") to promulgate regulations to protect human health and the environment from the improper management of hazardous waste. EPA promulgated the basic regulations for the hazardous waste program on May 19, 1980 at 45 F.R. 33066-33588. These regulations have been codified as 40 C.F.R. Parts 260-265. Although somewhat different in approach, these regulations set up a management system similar to that in Minnesota's rules.

The relationship between the state and federal hazardous waste programs is complex. When Congress passed RCRA it envisioned that control of hazardous wastes would be primarily a state responsibility. As such, implementation of the federal program would occur, for the most part, through EPA authorized state hazardous waste programs. Where states did not establish programs or the program did not meet federal standards, the EPA would assume regulatory control.

Section 3006 of RCRA provides that states may receive either final or interim authorization to run the hazardous waste management program. To receive final authorization the state program must be "equivalent" to the federal program, consistent with federal or state programs applicable in other states, and provide adequate enforcement to ensure compliance with RCRA. To qualify for interim authorization, a state must have a substantially equivalent program in existence within 90 days after promulgation of the final federal regulations.

In states that receive authorization, the state hazardous waste program operates in lieu of the federal program. Minnesota has not received either interim or final authorization. Therefore, at the present time both the state and federal programs are operative in Minnesota.

In June, 1980, the Minnesota Association of Commerce and Industry (hereinafter "MACI") requested the Legislative Commission to Review Administrative Rules (hereinafter "LCRAR") to review the state rules from two standpoints. LCRAR was requested to address the validity of the rules in terms of the manner in which they were adopted and to address the reasonableness of the rules in light of the adoption of less stringent rules by EPA. Representative Jim Pehler also requested the LCRAR to review the reasonableness of the state rules.

At a meeting held on June 16, 1980, the LCRAR voted to undertake an indepth review of the reasonableness of the rules. A hearing on the rules was subsequently held on August 19, 1980. In the testimony presented by Mr. Ted Shields, representing MACI, a formal request was made for the LCRAR to suspend the state hazardous waste rules and let the federal program for regulating hazardous waste be the operative one in Minnesota. MACI did not dispute the need to properly manage hazardous waste, but felt it could be done in an adequate and less costly way under the federal program. In general, the LCRAR denied MACI's petition to suspend the state rules, but recommended

that the Agency reduce duplicative efforts and continue to seek interim and final authorization from EPA to manage the hazardous waste program in Minnesota.

The Agency had recognized prior to the LCRAR's review that certain areas within the state rules could and should be revised to reduce some of the duplicative paperwork being created by the two programs. The LCRAR's recommendation coupled with the Agency's prior recognition of areas within the rules which could be changed to reduce duplicative paperwork, resulted in minor revisions to the Agency's hazardous waste rules which became effective on April 6, 1981.

At the same time, Agency staff began working on the more substantive amendments to the hazardous waste rules which were necessary before the Agency could receive EPA authorization for the hazardous waste program. As part of the revision of these rules the Agency staff engaged in an extensive public participation process. The first step in the effort was the compilation of a mailing list of interested parties. An initial letter and response card was mailed to approximately 4000 individuals or companies. This response card allowed each person to indicate which rules or portions of rules he or she was interested in. The staff received 850 responses to the initial mailing and these, along with subsequent requests, comprise the mailing list. In addition, Notices of Intent to Solicit Outside Opinion in Revisions to the Hazardous Waste Rules were published in the State Register.

On August 20, 1981, copies of the second draft of the rules, or portions if requested, were mailed to everyone on the mailing list along with a request that written comments be submitted by September 25, 1981. Public meetings to discuss the proposed rules were held on September 8, 10, 15 and 16, 1981. In addition to these open meetings several groups requested meetings to discuss specific issues. Based on the comments received as a result of these mailings and meetings, additional revisions were made to the draft rules.

The Agency Board's Committee on Hazardous and Toxic Materials considered the proposed revisions at its meeting on November 30, 1981. At that time it became apparent that several issues were still unresolved. The committee asked industry representatives and Agency staff to attempt to resolve the outstanding issues. Subsequent committee hearings were held on January 15 and 20 and February 10 and 17, 1982. Following the February 17, 1982 committee meeting all interested parties appeared to be in agreement on the proposed revisions.

At its meeting on March 9, 1982, the Agency Board approved the proposed revisions and authorized the Director to initiate the noncontroversial rulemaking process for adoption of the revisions to the hazardous waste rules. The proposed rules consisted of nine chapters: 1. Definitions; 2. Identification and Listing of Hazardous Waste; 3. Generator Standards; 4. Transporter Standards;

5. Facility Standards; 6. Interim Status Standards; 7. Standards for Specific Types of Facilities; 8. Temporary Land Disposal Facility Standards; and 9. County Programs. Because of the length of the rules and the need to have them put on the Revisor of Statute's computer, the rules were not published in the State Register until June 7, 1982. In response to this publication the Agency received numerous comments and requests for a hearing.

In 1982, the Minnesota Legislature amended Minn. Stat. § 116.07, subd. 4b, to require the Agency to adopt rules requiring hazardous waste facilities to have contingency plans in case of emergencies and requiring facilities to have the financial ability to assure that closure would occur in accordance with the rules and permit conditions. 1982 Minn. Laws, Ch. 569, § 19.

Between March, 1982, when the Agency authorized the initiation of rulemaking, and June 7, 1982, when the rules were published in the State Register, EPA made several amendments to its regulations which affected the Agency's proposed rules. In addition, on July 26, 1982, EPA published its final land disposal regulations. The EPA amendments meant that substantive changes were needed in several portions of the Agency's proposed rules if those rules were to be equivalent to the federal regulations. In light of these amendments, the issues raised by the comments and hearing requests, and the many nonsubstantive amendments which were needed to correct typographical and cross-referencing errors, the Agency decided to revise the proposed rules rather than go

to hearing on rules which would have to be amended as soon as they were adopted. Therefore, the proposed rules were withdrawn.

### III. NEED FOR THE PROPOSED AMENDMENTS TO THE HAZARDOUS WASTE RULES

Minn. Stat. § 14.23 (1982) requires an agency to make an affirmative presentation of facts establishing the need for and reasonableness of the rules or amendments proposed. In general terms this means that an agency must set forth the reasons for its proposal and the reasons must not be arbitrary or capricious. However, to the extent that need and reasonableness are separate, need has come to mean that a problem exists that requires administrative attention and reasonableness means that the solution proposed by the agency is a proper one.

Need is a broad test that does not easily lend itself to an evaluation of each proposed revision. In this broad sense the need for revisions to Minnesota's hazardous waste rules arises from three sources: A) the operation of two hazardous waste programs in the state and the authorization process adopted by EPA; B) the requirements of Minn. Stat. § 116.07, subd. 4b; and C) the need to clarify the intent of certain provisions of the existing rules and to reformat and renumber the rules to conform to the requirements of the Legislative Revisor's office.

#### A. EPA Authorization Process

As discussed in Part II. supra. Congress in adopting RCRA provided for eventual state control of the hazardous waste program

and set up the mechanism for EPA to grant both interim and final authorization to operate the program. Congress, in establishing the requirement of "substantial equivalence" for interim authorization, intended that this type of authorization be granted in a relatively liberal manner so as not to disrupt state activities and to encourage continued state efforts in reaching the goal of final authorization.

A precondition to applying for interim authorization is that the state must have "in existence a hazardous waste program pursuant to state law" within 90 days after promulgation of the EPA hazardous waste regulations. 42 U.S.C. § 6926(c). EPA has interpreted the word "program" to mean enabling legislation only. 45 F.R. 33387 (May 19, 1980). Although only enabling legislation is required to meet the 90-day cut off, EPA requires an entire (legislation and regulations) program to be in place prior to granting both interim and final authorization.

One of the most frequently discussed issues by EPA in development of the state program regulations was to what extent state programs should be required to be duplicates of the federal program. EPA has interpreted the requirements of equivalence and substantial equivalence to mean that the federal regulations are minimum standards which the states must meet. 40 C.F.R. § 123.12(i)(1); see also 42 U.S.C. § 6929. Thus, the states are allowed to establish stricter standards as



long as they are consistent with the federal program. Minnesota's existing rules are more stringent in some respects than the EPA regulations but less stringent in other respects.

The federal program was implemented in two phases. Phase I regulations (primarily those relating to the identification of hazardous wastes and generator and transporter standards) were issued on May 19, 1980. Portions of the Phase II regulations were issued in 1981, with the final portion (land disposal facility standards) issued on July 26, 1982. Interim authorization corresponds to this phasing. A state must receive both phases of authorization to operate the program for the two-year period allowed by statute for interim authorization.

Final authorization, which may be applied for at any time following the promulgation of the second phase of the federal program, requires that the state program must be equivalent and consistent with the federal program. EPA has defined equivalent to mean equal to in effect. In terms of consistency, EPA's goal is to achieve an integrated national program which requires that final state programs do not conflict with each other. A final state program must include equivalent and consistent standards for generators, transporters, and owners and operators of treatment, storage, and disposal facilities. 45 F.R. 33395 (May 19, 1980). Additionally, the program should include provisions for permitting and enforcement.

In September, 1980, the Agency submitted a draft application to the Region V Office of EPA for interim authorization to run the hazardous waste program in Minnesota. EPA subsequently sent back a very detailed reply noting numerous areas in which they felt the state program was not substantially equivalent to the federal program. Their concerns centered around the identification and listing of hazardous waste, interim status standards for facilities, county involvement in administering the program, the manifest system, and compliance monitoring and enforcement. As a result, it was clear that interim authorization could not be obtained until major revisions were made to the state rules. The revisions to the state rules which were effective in April, 1981 corrected some minor deficiencies, but were not sufficient for the state to receive interim authorization. One purpose of the proposed amendments which are the subject of this proceeding is to comply with the federal requirements for authorization.

Both the state and federal rules are presently operating within Minnesota. This situation is not beneficial since two programs must be enforced by the Agency, industry must comply with two different sets of rules regarding hazardous waste, and the public is paying for the maintenance of two similar programs.

Upon completion of the revisions to the state hazardous waste rules, the Agency will apply for final authorization. Therefore, the state program must include equivalent requirements for the identification and listing of hazardous wastes, generator, transporter, and facility standards.

B. Requirements of Minn. Stat. § 116.07, Subd. 4b

The Minnesota Legislature has mandated that the Agency promulgate rules for hazardous waste facilities which require that the owners or operators of a facility 1) have contingency plans for emergencies, 2) establish a mechanism to assure that money to cover closure and post-closure costs is available, and 3) maintain liability insurance during the operating life of the facility. 1982 Minn. Laws, ch. 569, § 19. While the existing rules have provisions requiring written emergency procedures and setting forth closure requirements, these provisions are not adequate to comply with the requirements of 1982 Minn. Laws, ch. 569, § 19. The proposed amendments comply with these requirements.

C. Clarification and Reorganization

During the four years that the existing state hazardous waste rules have been in effect the need to clarify the intent of certain provisions has become apparent. In addition there is a need to reformat and renumber the rules to conform to the requirements of the Legislative Revisor's office. This has resulted in a complete reorganization of the existing rules. A chart showing where the provisions of the existing rules appear in the new rules is attached as Appendix A.

The Agency believes that these facts establish the need for the proposed revisions to the hazardous waste rules. The

discussion in the rest of this Statement is focused on the reasonableness of the proposed amendments.

#### IV. REASONABLENESS OF THE PROPOSED AMENDMENTS

##### A. Introduction

The Agency is required to make an affirmative presentation of facts establishing the reasonableness of the rules or amendments proposed. Minn. Stat. § 14.23 (1982). Reasonableness is the opposite of arbitrariness and caprice and means that there is a rational basis for the Agency's action.

In developing a hazardous waste program sufficient to qualify for EPA authorization, the Agency considered various alternatives. Perhaps the most obvious alternative is the adoption of the federal regulations with only minor amendments to adapt them to Minnesota statutory requirements. This alternative was rejected because the Agency believes the federal regulations have several significant weaknesses. For example, under the federal program non-listed hazardous waste being reused or recycled is exempted from regulation. As a result EPA will not know these wastes even exist much less have assurance that they are being properly managed. Another example is the small quantity exemption. Under the EPA regulations small quantities, up to 1000 kilograms a month, are exempted from reporting and management

requirements. As a result these hazardous wastes could be disposed of legally in a sanitary landfill intended only for solid waste.

Because of these and other gaps of coverage and lack of information and control in other areas, the Agency rejected the alternative of merely adopting the federal regulations verbatim. Instead the Agency elected to use those portions of the federal regulation which were stronger or more comprehensive than the current state rules such as the facility requirements and to retain the strong points of the existing state rules. The Agency believes that this is a reasonable approach to revising the hazardous waste rules.

As part of the revision of the hazardous waste rules the Agency engaged in an extensive public participation process. The initial portions of that process were discussed at pages 11-13 supra. Following the decision to withdraw the amendments which were published on June 7, 1982, the Agency reviewed the federal land disposal rules and other EPA amendments to determine if the proposals were adequate or if stricter standards might be needed in some areas. The Agency also worked with the persons who had submitted comments and hearing requests on the July 7, 1982 proposed rules to resolve the problems that had been identified. In December 1982, the Agency notified persons on the mailing list that copies of the draft land disposal facility rules were available and solicited comments on those rules.

Through the Waste Management Board (hereinafter "WMB"), the Agency contacted the Local Project Review Committees established for the sites selected by the WMB for proposed hazardous waste disposal facilities of the proposed amendments to the hazardous waste rules. Agency staff then met with the Local Project Review Committees from Aitkin and Carver Counties to discuss the proposed rules. Copies of the proposed rules were also provided to EPA. EPA staff provided numerous comments on the draft rules and these comments have been incorporated into these proposed revisions.

The Agency staff presented the revised amendments to the hazardous waste rules to the Agency Board's Committee on Hazardous and Toxic Materials on June 8, July 12 and 27, and August 16, 1983. Representatives of various industry groups and members of the public participated in these meetings. Based on the result of these meetings, the Agency was not aware of any significant unresolved issues with respect to the revised amendments.

At its meeting on September 27, 1983, the Agency Board approved the proposed revisions and authorized the Director to initiate the noncontroversial rulemaking process for adoption of the amendments to the hazardous waste rules. At that time the proposed amendments to the hazardous waste rules were divided into two packages for purposes of rulemaking. Chapters 1-4 and 8 (Definitions, Identification, Generator Standards, Transporter Standards and County Programs) which are

substantively similar to the provisions of Chapters 1-4 and 9 which were published in the State Register on June 7, 1982 were in one package. Chapters 5-7 (Facility Standards, Interim Status Standards and Standards for Specific Types of Facilities) which replaced Chapters 5-8 of the June 7, 1982 proposed rules were proposed as a separate package.

The proposed amendments were published in the October 24, 1983 State Register. 2/ In response to the Notice of Intent to Adopt Rules Without a Public Hearing the Agency received numerous comments and more than seven requests for a hearing on both sets of rules. The Agency amended portions of the proposed rules in response to the comments at its December 20, 1983 meeting and authorized the consolidation of the two packages of rules.

The following discussion addresses the reasonableness of the proposed amendments on a chapter by chapter basis.

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2/ The proposed amendments to the rules governing generators of hazardous waste, the identification, transportation and management of hazardous waste, and county hazardous waste programs, 6 MCAR §§ 4.9001 - 4.9003, 4.9005 and 4.9008 - 4.9010, renumbered as 6 MCAR §§ 4.9100 - 4.9259 and 4.9559 - 4.9560, were published at 8 S.R. 732 (October 24, 1983) as corrected in the Errata published at 8 S.R. 1086 (November 7, 1983) and 8 S.R. 1238 (November 21, 1983). The proposed amendments to the rules governing hazardous waste treatment, storage and disposal facilities, 6 MCAR § 4.9004, renumbered as 6 MCAR §§ 4.9280 - 4.9481, were published at 8 S.R. 811 (October 24, 1983) as corrected in the Errata published at 8 S.R. 1086 (November 7, 1983) and 8 S.R. 1086 (November 7, 1983).

B. Chapter One: Definitions, Variances, References,  
Petitions, and Other Standards, 6 MCAR §§ 4.9100 - 4.9104

Chapter One contains the general provisions of the hazardous waste rules. These provisions are necessary in order to provide persons subject to the rules with the definitions of the terms used throughout the rules as well as other information relating to the administration of the hazardous waste program.

6 MCAR § 4.9100

6 MCAR § 4.9100 contains the definitions of key words and phrases used throughout the hazardous waste rules. Definitions of terms used only once, or only in conjunction with a single rule, are defined in the rule in which they are used. Many of the definitions in the proposed rules are renumbered provisions of 6 MCAR § 4.9001 B., the definitions section of the existing hazardous waste rules. Certain provisions of the existing rules (even though shown as deleted) have been moved from the definitions section to other provisions of the proposed amendments. Certain provisions of the existing definitions have been proposed for repeal because the terms are not used in the proposed rules. Other provisions have been amended to conform to statutory changes or to the definitions of the terms used in the federal regulations. A chart which shows the existing definitions, whether they have been renumbered, amended or deleted and where they appear in the proposed rules, is included in Appendix C.



The new definitions are necessary to define terms included in the amendments which are not used in the existing rules. These definitions basically incorporate the language used in the definitions section of the EPA regulations, 40 C.F.R. Part 260. The rationale for the language used in the definitions is contained in several EPA background documents. The Agency is relying on those background documents, which are listed in Part VIII. A list of the proposed definitions, their source and the EPA background documents containing the supporting rationale is contained in Appendix C.

This rule contains seven definitions which do not come from either 6 MCAR § 4.9001 B. or 40 C.F.R. §§ 260.10(a) and 261.2. The definition of "control equipment" is taken from the definitions section of the Agency's air quality rules, APC 2(a)(7). "Independent registered engineer" is used in Chapters 5 and 6 and means a registered engineer who is not an employee of the facility owner or operator. The definition of the term "petroleum-derived waste oil" was adopted from EPA's January 19, 1981 report to Congress addressing the need to regulate such wastes under the RCRA regulations. This definition is necessary because the proposed rules exempt from coverage by these rules petroleum-derived waste oils which do not contain a listed waste and which are being beneficially used, reused, recycled or reclaimed. "Pretreatment unit" is used extensively in Chapter 7. EPA uses, but does not define, pretreatment unit. The Agency, however, believes it is

necessary to define this term so there is no dispute as to its meaning. The definition of "seasonal high water table" is needed because the water table is not static but will fluctuate depending on precipitation. It is necessary to establish the highest point in the water table in order to correctly design a land treatment facility unsaturated zone monitoring program and to comply with the locational requirements for disposal facilities. The definition of "state" is self-evident. The definition of "surficial karst feature" is intended to describe an opening at the land surface which could allow the introduction of contaminants to the ground water or the collapse of shallow subsurface cavities which could damage a facility liner or foundation. It is reasonable to include this definition because surficial karst features are prominent in southeastern Minnesota and are a major limitation in siting hazardous waste facilities.

In the amendments which it adopted on December 20, 1983, the Agency Board corrected an erroneous cross-reference in the definition of pretreatment unit, 6 MCAR § 4.9100 SSS., and reordered the language in the definition of spill, 6 MCAR § 4.9100 FFFF., to clarify the meaning. No substantive changes were made.

6 MCAR § 4.9101

6 MCAR § 4.9101 is existing rule 6 MCAR § 4.9001 F. amended to restrict the issuance of variances to situations where the variance would not result in non-compliance with the EPA hazardous

waste regulations. In order for Minnesota to receive authorization from EPA to operate the state hazardous waste program in lieu of the federal program, the state program must be at least as stringent as the federal program. EPA staff have informed the Agency that EPA will not grant variances to its regulations and that for the Agency to grant variances would make the state program less stringent. Therefore, it is reasonable to add a provision which clarifies which types of variances will be issued.

6 MCAR § 4.9102

6 MCAR § 4.9102 contains a list of documents referred to in 6 MCAR §§ 4.9100 - 4.9560 and the addresses where these documents may be obtained. It is reasonable to include this information so that persons regulated by these rules may obtain necessary information.

6 MCAR § 4.9103

6 MCAR § 4.9103 is renumbered rule 6 MCAR § 4.9001 G. No substantive amendment has been made to this provision.

6 MCAR § 4.9104

6 MCAR § 4.9104 A. sets forth the procedure whereby a generator or the owner or operator of a hazardous waste facility may petition the Director for permission to use a testing or analytical method other than those described in 6 MCAR §§ 4.9128 - 4.9137, 4.9280 - 4.9322 and 4.9380 - 4.9422 and also sets forth

the factors to be considered by the Director in making her decision. The language of this rule has been taken from 40 C.F.R. § 260.21. This provision is necessary because it is not possible to set forth in these rules every conceivable acceptable testing and analytical method nor would it be reasonable to amend the rules whenever a new test was developed. As long as a testing or analytical method can determine, with at least the same degree of reliability as the method set forth in these rules, whether a waste is hazardous, the person doing the testing should be able to use the test method of his choosing. This rule allows that option.

6 MCAR § 4.9104 B. sets forth the procedure whereby a generator may petition to have a waste which would otherwise be treated as hazardous excluded from coverage by these rules. Many of the wastes or waste streams listed as hazardous under 6 MCAR § 4.9134 are listed because the waste streams produced from the manufacturing process are as a general rule hazardous. This rule provides a generator with the opportunity to demonstrate that, because his process differs in some degree from the normal process or for some other documented reason, the waste produced at his facility is not a hazardous waste. The purpose of these rules is to regulate the management of wastes which are hazardous. Therefore it is reasonable to include a procedure whereby wastes which are generally hazardous but which can be demonstrated not to be

hazardous in a specific case can be excluded from coverage by these rules. The language of this rule has been adopted from 40 C.F.R. § 260.22 3/ and is discussed at 45 F.R. 33070 and 33116 - 33117 (May 19, 1980). The Agency is relying on this discussion as support for this provision.

Rules 6 MCAR §§ 4.9001 C., D. and E. are repealed. Rule 6 MCAR § 4.9001 C. contains a list of abbreviations used in the existing hazardous waste rules. The revised rules do not contain these abbreviations. Rule 6 MCAR § 4.9001 D. is a list of the documents contained in the appendices of the existing rules. The revised rules do not contain any appendices. Minn. Stat. § 645.20 now covers the provisions for severability presently found in 6 MCAR § 4.9001 E. Since the provisions of these rules are no longer needed, it is reasonable to repeal them.

C. Chapter Two: Identification and Listing of Hazardous Waste, 6 MCAR §§ 4.9128 - 4.9137

The proposed rules in Chapter Two establish the criteria for determining whether a waste is hazardous, identify waste streams

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3/ The language of many of the proposed amendments is taken from the corresponding EPA regulation. The EPA regulations have been codified at 40 Code of Federal Regulations (C.F.R.) Parts 260 - 266. Unless indicated otherwise, the regulation referenced as the source of the language of any proposed amendment is the EPA regulation, either interim final or final, as amended through April 1, 1983.

and waste constituents which are hazardous and govern the management of hazardous waste by use, reuse, recycling and reclamation and the management of residues of hazardous waste in empty containers and liners. This chapter contains provisions from existing hazardous waste rules 6 MCAR §§ 4.9001 B. and 4.9002. In addition this chapter incorporates the EPA regulations governing the identification and listing of hazardous waste which are found at 40 C.F.R. Part 261. As support for the reasonableness of the federal regulations incorporated in 6 MCAR §§ 4.9128 - 4.9137. The Agency is relying on the background documents prepared by EPA when EPA promulgated Part 261. These documents are listed in Part VIII.

The provisions of existing rule 6 MCAR § 4.9002 B. are incorporated into proposed rule 6 MCAR § 4.9132 and are discussed beginning at p. 54 infra.

6 MCAR § 4.9128

Rule 6 MCAR § 4.9128 establishes the criteria for determining when mixtures of hazardous and nonhazardous waste are considered to be hazardous waste and regulated by these rules and also lists certain types of wastes which are not considered to be hazardous waste and are excluded from regulation under these rules.

In general, when a hazardous waste is mixed with a nonhazardous waste the resulting mixture must be handled as a

hazardous waste unless it meets the criteria set forth in 6 MCAR § 4.9128 B. This provision is necessary to prevent generators from evading the hazardous waste rules simply by commingling listed hazardous wastes with nonhazardous wastes and because many wastes remain hazardous even after admixture or dilution. A rule making all mixtures of hazardous and nonhazardous waste subject to the provisions of the hazardous waste rules would be too broad however, since mixing some types of hazardous waste with nonhazardous waste can render the hazardous waste nonhazardous. The Agency has incorporated in § 4.9128 the provisions of 40 C.F.R. § 261.3 relating to mixtures, with certain exceptions. The background material supporting the EPA regulation was published at 46 F.R. 56582 - 56589 (November 17, 1981).

In developing these amendments, the Agency did not agree with EPA that dilution of all characteristic hazardous wastes into nonhazardous wastes should be permitted. While dilution of some characteristic hazardous wastes results in wastes which do not pose a substantial hazard to human health or the environment, dilution is not an acceptable management method for toxic wastes. The dilution of wastes containing toxic or EP Toxic constituents does not remove these constituents. This waste material may be reconcentrated by bioaccumulation and, if placed in a sanitary landfill, may be leached and thus may cause ground water contamination.

The Agency also disagrees with the wording of the federal regulation on wastewater mixtures. Wastewater mixtures are covered by 6 MCAR § 4.9128. The Agency agrees that it is reasonable to exempt a mixture of large volumes of wastewater and the relatively small amounts of listed hazardous wastes which are introduced into the wastewater as a result of normal manufacturing operations or on-site laboratory operations. In addition, limiting the exemption to wastewater mixtures managed in a wastewater treatment system whose discharge is subject to regulation under either Section 402 or 307(b) of the Clean Water Act will help to prevent indiscriminate discharge of wastes into wastewater treatment systems because to do so could jeopardize the generator's ability to comply with its Clean Water Act discharge requirements. The Agency does not, however, believe that the language of the federal regulation is sufficiently clear and have reworded the provisions relating to wastewater mixtures to explicitly provide that the hazardous waste must be discharged into the wastewater stream as a result of normal manufacturing operations for the exemption to be applicable.

Rule 6 MCAR § 4.9128 C. lists wastes which may be stored, labeled, transported, treated, processed and disposed of without complying with the provisions of the hazardous waste rules. This list combines existing exemptions from 6 MCAR § 4.9002 with the exemptions from 40 C.F.R. § 261.4.



Subparagraphs C.1., C.2., C.3., C.5., C.7. and C.10. are renumbered provisions of existing rule 6 MCAR § 4.9002 C. with minor clarifying amendments. Subparagraph C.1., which exempts normal refuse from households, has been expanded to clarify what is meant by normal refuse and what constitutes a household. The provisions of existing rule 6 MCAR § 4.9002 C.5. have also been incorporated into subparagraph C.1. Subparagraph C.2. is a combination of the provisions of existing rule 6 MCAR § 4.9002 C.2. and C.7. and the corresponding federal exemption, 40 C.F.R. § 261.4(a)(1)(ii). Subparagraphs C.3. and C.5. are unchanged.

Subparagraph C.4. exempts mining overburden returned to the mine site and is identical to the exemption found at 40 C.F.R. § 262.4(b)(3). This exemption is directed to strip mining operations and subsequent reclamation of the site. Reclamation of surface mines will commonly involve the return to the mine site of waste overburden that has been removed to gain access to the ore deposit. Reclamation is not solid waste disposal and overburden intended to be returned to the mine site is not discarded within the meaning of the applicable legislative authority. The Agency is relying on EPA's expertise in support of this exclusion which is discussed at 45 F.R. 33099 - 33101 (May 19, 1980). This exemption is reasonable because there is no reason to believe that, in general, moving overburden aside and returning it to the mine site should cause health or environmental problems.

Subparagraph C.6. exempts boiler wastes and ash produced by electric power utilities and is based on the exemption found at 40 C.F.R. § 261.4(b)(4). The EPA regulation states that this exemption applies only if the ash is produced from fuel that was primarily fossil fuel. The Agency felt that "primarily" should be defined and has chosen 51 percent or more fossil fuel as meeting the intent of the term "primarily". In addition, the revised rule limits the other 49 percent to fuel that is not hazardous waste. The reason for this limitation is that the hazardous waste may not be completely destroyed when burned and the hazardous component(s) or hazardous decomposition products could end up in the ash. It is reasonable to have this restriction because it prevents the possibility of unknowingly producing an ash that is hazardous.

Subparagraph C.7. is existing rule 6 MCAR § 4.9002 C.8. but with the exemption for wastes discharged pursuant to a State Disposal System permit deleted. EPA regulations exempt wastes discharged pursuant to a National Pollutant Discharge Elimination System (hereinafter "NPDES") permit but not wastes discharged pursuant to only a state permit. If the Agency were to adopt an exemption not contained in the EPA regulations, the Agency rules would be less stringent and therefore not equivalent to the federal program. Since the existing exemption is too broad, the Agency is narrowing the exemption to correspond with 40 C.F.R. § 261.4(a)(2).

Subparagraph C.8. exempts wastes associated with drilling for fossil fuels and geothermal energy and is identical to the

exemption found at 40 C.F.R. § 261.4(b)(5). The Agency has included this exemption based on EPA's inclusion of this exemption and is relying on EPA's expertise as support for the exemption.

Subparagraph C.9. exempts wastes from the extraction, beneficiation and processing of ores and minerals and is substantially identical to to 40 C.F.R. § 261.4(b)(7). As originally drafted, subparagraph C.9. was identical to the federal regulation and exempted solid waste from the extraction etc. of ores. During the comment period the Agency received a comment from T. W. Harries representing the Eveleth Taconite Company and the Eveleth Expansion Company that the exemption as drafted did not cover the same waste as the EPA regulations. Under the federal program hazardous waste is a subset of solid waste. Under the state program the terms are mutually exclusive. By exempting solid waste the state exemption was narrower than the federal exemption. This was not the Agency's intent. Therefore, at its December 20, 1983 meeting the Agency Board amended this subparagraph to delete the word "solid" so that the state exemption would cover the same wastes as the federal exemption. The Agency is relying on EPA's expertise as support for this exemption. The basis for this exemption is discussed at 45 F.R. 76618 - 76618 (November 19, 1980).

Subparagraph C.10. continues the exemption for wastes resulting from spills presently found at 6 MCAR § 4.9002 C.12. The language has been amended, however, to clarify that the exemption applies only as an immediate response to an emergency and that the waste must ultimately be sent to a permitted hazardous waste facility.

Subparagraph C.11. defines conditions for exempting trivalent chromium wastes and is identical to 40 C.F.R. § 261.4(b)(6)(i). This exemption is directed to tanning wastes but can be applied to any other chromium waste that meets the same conditions. This exemption is reasonable because trivalent chromium, if not converted to hexavalent chromium in a manufacturing process, is non-hazardous. The Agency is relying on EPA's expertise as support for this exemption. The basis for the exemption is discussed at 45 F.R. 72035 - 72037 (October 30, 1980).

Subparagraph C.12. exempts hazardous wastes that are formed in product or raw material storage tanks, transport vehicles, pipelines or process units and is identical to 40 C.F.R. § 261.4(c). When these wastes are removed, or upon expiration of 90 days after the containing unit ceases to be used for the product or raw material, the wastes become hazardous wastes. This provision is reasonable because these units are designed to hold valuable products or raw materials and are capable of holding, and are typically operated to hold, the hazardous wastes which are generated in them until the wastes are purposefully removed. As a result, any risks to human health or the environment posed by these wastes prior to removal are very low and are only incidental to the risks posed by the product or raw material with which they are associated. A more detailed discussion of the basis for this exemption is found at 45 F.R. 72024 - 72026 (October 30, 1980) and 45 F.R. 80286 - 80286 (December 4, 1980).

Subparagraph C.13. exempts petroleum-derived waste oils from regulation under the hazardous waste rules. The exemption applies only to waste oils which do not contain a listed hazardous waste and which are being beneficially used, reused, recycled or reclaimed. Existing rule 6 MCAR § 4.9002 B.3. lists used crankcase oil and petroleum wastes as hazardous wastes and the definition of petroleum wastes limits such wastes to wastes from petroleum refinery operations. Most of the petroleum wastes regulated under the existing rules which are actually hazardous are regulated under the proposed rules under the toxicity characteristic or are listed in proposed rule 6 MCAR § 4.9134. The remaining petroleum wastes and used crankcase oil are regulated under the proposed rules only if they are or if they contain listed wastes. The Agency believes it is reasonable at this time to regulate only those waste oils which are likely to cause environmental harm. The waste oils exempted pursuant to this subparagraph have an economic value and a sound recycling market exists for these materials. Therefore the likelihood that mismanagement of these wastes would cause environmental problems is significantly reduced.

The Agency has received numerous comments with respect to the waste oil exemption. These suggestions range from a proposal to make all waste oil hazardous to the proposal that no waste oil should be regulated as a hazardous waste. The Agency is currently

participating in a national waste oil study being conducted by EPA. This study includes sampling and analyses of waste oil generated in Minnesota. When the results of this study are available the Agency can better evaluate what level of regulation is appropriate for waste oil. To regulate all waste oil as hazardous waste at this time would place burden on the thousands of service stations and small businesses which handle crankcase or cutting oils out of proportion with the extent of the known hazard. The Agency believes that the proposed exemption, which continues the regulation under the hazardous waste rules of waste oil which does present an environmental problem, is a reasonable approach at this time.

Subparagraph C.14. conditionally exempts waste samples and other samples collected for the purpose of monitoring or testing and is identical to 40 C.F.R. § 261.4(d). Pursuant to this exemption, samples are excluded from the generator and transporter requirements when shipped from the generator or any other person who collects the sample to a laboratory, or vice versa, provided that certain packaging and labeling requirements are met, and from the storage requirements until the decision is made to discard the sample. In addition this provision clarifies that testing of samples does not require a treatment permit. The Agency agrees with EPA that subjecting test samples to the full coverage of the rules is more regulation than is necessary to protect human health and the environment. EPA's information indicates that samples collected for analytical or characterization purposes are

usually shipped in quantities under a gallon in size. Economic incentives exist to insure that the purposes of the generator and transporter requirements (safe transport and delivery to an appropriate destination) are achieved without subjecting the samples to the full set of requirements. In addition, United States Department of Transportation (hereinafter "U.S. DOT") and United States Postal System (hereinafter "USPS") regulations apply to many sample shipments. Where U.S. DOT or USPS regulations do not apply, this provision sets forth the applicable requirements. A more detailed explanation of the basis for this exemption is set forth at 46 F.R. 47426.- 47429 (September 25, 1981).

Subparagraph C.15. exempts scrap metal which is not toxic and not listed in 6 MCAR § 4.9134 and which is to be reused or recycled from regulation under these rules. This exemption is narrower than the exemption for scrap metal in the existing rules. Under existing rules 6 MCAR §§ 4.9001 B.34 and 4.9002 C.3., scrap metal is included within the definition of rubbish and all rubbish is excluded from regulation under the hazardous waste program. This broad exemption was less stringent than the federal requirement and has therefore been revised. The exemption does not apply to scrap metal which is air pollution control equipment dust or is not in a solid form since such wastes pose a toxic hazard when improperly managed. However, solid scrap metal which is not toxic and which is to be beneficially reused or recycled does not pose such a hazard.

Existing rules 6 MCAR § 4.9002 C.4., C.9., C.10. and C.11. have been repealed. Subparagraph C.4. excluded asbestos in taconite wastes from the definition of hazardous waste. Subparagraph C.9., which exempted municipal sewage sludge, was based on the statutory definition of hazardous waste found at Minn. Stat. § 116.06, subd. 13. 1983 Minn. Laws, ch. 373, § 43 repeals the sewage sludge exclusion in the definition of hazardous waste. The EPA does not exclude either asbestos in taconite tailings or sewage sludge from coverage by its regulations. See 40 C.F.R. § 261.4. Repealing these exclusions does not mean that asbestos in taconite tailings or sewage sludge is a hazardous waste. Rather it puts these wastes in the same category as most other wastes, thereby requiring generators to evaluate the waste to determine if it is hazardous. Retention of these exemptions would make the Agency's rules less stringent than the EPA regulations and could jeopardize the Agency's ability to obtain EPA authorization for the hazardous waste program. Subparagraph C.10., which exempts certain radioactive waste, is unnecessary because the exemption provided therein is contained in the statutory definition of hazardous waste found at Minn. Stat. § 116.06, subd. 13. Subparagraph C.11. is no longer necessary because pesticide wastes are covered by other provisions of the proposed rules, see e.g. 6 MCAR § 4.9134. Therefore, it is reasonable to repeal these four subparagraphs.



6 MCAR § 4.9129

Rule 6 MCAR § 4.9129 governs the management of hazardous waste by use, reuse, recycling and reclamation. The existing state rules exempt a generator's on-site resource recovery facility from the requirement of having a hazardous waste facility permit. The proposed rule eliminates that exemption, but has been written to encourage beneficial use, reuse, or legitimate recycling, or reclamation by providing specific paperwork exemptions and management requirements based upon the hazardous properties of the waste and the methods of use, reuse, and recycling.

The EPA regulation on use, reuse, recycling, and reclamation, 40 C.F.R. § 261.6, exempts from regulation all hazardous wastes which are not sludge, do not contain listed wastes, and are not in themselves listed wastes. The generators, transporters, and facilities are fully exempt from notifications, reports, facility standards, and permits. Hazardous wastes which are sludges, or are listed wastes or contain listed wastes are regulated by the generator and transporter standards, the notification requirements, the general facility standards, and permit requirements for storage facilities only.

All hazardous wastes, regardless of their end use, may pose significant health and environmental hazards. Excluding completely

from regulation wastes that are to be reused, recycled or reclaimed would create a major regulatory loophole. Although a hazardous waste may be used, reused, recycled, or reclaimed, it still poses a potential problem for human health and the environment if the wrong method of use, reuse, recycling, or reclamation is selected for the hazardous waste in question. Moreover, recycling markets fluctuate widely in their demand so a waste may fall in and out of the regulatory system and a waste originally intended for reuse may ultimately be disposed of instead. Therefore, the Agency believes that minimal requirements governing the management of wastes which will be beneficially reused are necessary to protect the public health and the environment.

Paragraph A. of 6 MCAR § 4.9129 covers applicability. It is reasonable to include this provision so that persons covered by these rules can be informed of the subject covered without having to read the entire rule.

Subparagraph B.1. applies to the same hazardous wastes as 40 C.F.R. § 261.6 (a)(1) and (2). However, the Agency did not adopt EPA's complete exemption of these wastes from regulation. Under this proposed rule a generator of a hazardous waste which is not a sludge, and is neither listed in 6 MCAR § 4.9134 nor toxic pursuant to 6 MCAR § 4.9132 F., is required to: 1) evaluate the waste to ensure that it qualifies for the exemption, 6 MCAR §§ 4.9205 - 4.9208; 2) submit a disclosure, an annual report and keep records, 6 MCAR §§ 4.9211, 4.9217 - 4.9220; 3) manifest

the waste when it is transported, 6 MCAR §§ 4.9212 - 4.9213; 4) properly manage the hazardous waste, 6 MCAR §§ 4.9215; 5) comply with the outdoor storage requirements for generators, 6 MCAR § 4.9216; and 6) comply with other selected storage requirements based on the method of storage, 6 MCAR §§ 4.9317, 4.9318 and 4.9415. It is reasonable to require manifests, a disclosure, recordkeeping, an annual report, waste evaluation and proper management from generators of wastes that may be recycled to ensure that a specific hazardous waste will be used, reused, recycled, or reclaimed by methods that will not jeopardize human health or the environment. These requirements will not be a significant burden for generators and will not impede beneficial recycling.

It is necessary for a generator to evaluate his waste to determine its characteristics and whether it is hazardous, regardless of whether it is to be used, re-used, recycled or reclaimed or otherwise handled. A legitimate recycling operation would not accept a generator's hazardous waste without a chemical evaluation, in order to protect its personnel, equipment and permits. Proper management includes utilizing transporters and facilities which have valid identification numbers and reporting and recovering all spills.

The disclosure contains a list of all hazardous wastes generated, the chemical composition of the waste, the tests used

to identify the hazardous properties and a management plan for each waste that is hazardous. The disclosure is a one-time requirement which provides the Agency with a means of knowing what the waste is, the names of the transporter and recycling facility, the rules with which the generator must comply, and information for the Waste Management Board regarding the types and quantities of wastes which are or may be recycled for facility planning purposes. The annual report is the mechanism which notifies the Agency, on an annual basis, of changes in quantities and management, and therefore, the rules with which the generator must comply. If the method of management does not change, the generator will only have to sign a certification to that effect. The Agency believes that the availability of the broader data gathered from disclosures and annual reports will, as an additional benefit, enhance the exchange of information regarding the viability of using, reusing, recycling or reclaiming similar hazardous wastes. The data will allow generators of similar hazardous wastes to know of potential use, reuse, recycling and reclamation options which are currently available.

Subparagraph B.1.d. establishes requirements for outdoor storage of hazardous waste which is to be reused or recycled. Subparagraphs B.1.f. - g. establish the requirements for the storage of such hazardous waste in surface impoundments, waste piles and tanks. These provisions are necessary to prevent

environmentally-unsound storage methods. Specifically the rules referenced in subparagraph B.1.d. require that hazardous wastes stored outdoors be placed on a curbed surface which is impervious to the waste being stored in order to protect surface and ground water; that shading be provided for ignitable wastes to prevent excessive heat generation and subsequent ignition and pressure increases and container failures; and that the storage area be protected from unauthorized access and inadvertant damage from vehicles or equipment.

The surface impoundment requirements, selected provisions of proposed rules 6 MCAR § 4.9317, address conditions for containment, closure, and ignitable, reactive and incompatible wastes. The containment provision requires the owner or operator to prevent overtopping, thus preventing spillages which could contaminate surface or ground water. The closure provision requires the owner or operator to remove or decontaminate the hazardous waste and other materials and to close the surface impoundment as a storage facility. Since the wastes are being stored prior to recycling, there would be no reason or need to leave the wastes in the impoundment for disposal. It is therefore reasonable to treat the surface impoundment as a storage facility rather than a disposal facility. Also, since the facility has not been through the permitting process and the arrangements necessary for post-closure care will not have been made, it is reasonable to require removal

or decontamination of hazardous waste and other materials at closure. Special requirements for the management of ignitable, reactive and incompatible wastes require the owner or operator to either treat the wastes so that they no longer exhibit these characteristics or manage the wastes to prevent ignition or reaction. Such requirements are necessary and reasonable to prevent adverse effects on human health and contamination of the environment due to wastes igniting or reacting.

The waste pile requirements, selected provisions of proposed rule 6 MCAR § 4.9318, address conditions for run-on control, run-off management, wind dispersal control, closure and ignitable, reactive and incompatible wastes. The run-on control, run-off management and wind dispersal control provisions are reasonable since they require the owner or operator to manage the waste pile to prevent any discharge of hazardous waste, thus protecting human health and the environment. The closure requirement and special requirements for ignitable, reactive and incompatible wastes for waste piles are similar to those for surface impoundments and are considered reasonable and necessary for the same reasons given in the previous paragraph. Therefore, they will not be discussed again here.

The storage requirements for tanks, selected provisions of proposed rule 6 MCAR § 4.9415, address conditions for general operation, inspections, closure and ignitable, reactive and incompatible wastes. The general operating requirements are

reasonable since they require the owner or operator to operate the facility in a manner which prevents spills, leaks and overflows of hazardous waste, thus protecting human health and the environment. The inspection requirements are reasonable since they are used as preventative measures to help avert the release of hazardous waste that would affect public health and the environment due to malfunctions or deterioration of equipment. The closure requirement and special requirements for ignitable, reactive and incompatible wastes for tanks are similar to those for surface impoundments and are considered reasonable and necessary for the same reasons as discussed previously. Therefore they will not be discussed again here.

Additional requirements are imposed on the outdoor storage of EP toxic wastes in tanks, surface impoundments and waste piles. These requirements include all the generator, transporter, facility and interim status standards. These provisions also require owners or operators who store EP toxic wastes outdoors for subsequent reuse or recycling to obtain Agency permits for outdoor storage facilities and to comply with all standards. Thus, EP toxic wastes stored outdoors prior to reuse or recycling are subject to the same requirements as hazardous wastes which are not to be recycled or reused.

As stated above, the recycling market fluctuates widely. EP toxic wastes have a high potential for leaching hazardous constituents into the soil and ground water. The Agency is

dealing with several situations where waste which was originally intended for recycling has been stored in an uncontrolled manner for extended periods of time causing soil and ground water contamination. In one situation lead plates from batteries have been stored in an uncontrolled waste pile for over 10 years. This has resulted in soil contaminated with lead, the discharge of several tons of lead into the city sewer and violations of the air quality standards. In another situation the uncontrolled outdoor storage of EP toxic wastes has resulted in a pH of 1.0 in soils as deep as 17 feet under the waste pile, soils contaminated with lead and arsenic, and the discharge of acid runoff into storm and sanitary sewers causing damage. Because of the high potential of these wastes to leach and the fact that the fluctuating recycling market can lead to extended storage of these wastes, it is reasonable to impose these requirements on the outdoor storage of EP toxic wastes and to regulate them to the same extent as hazardous wastes which are not being reused.

Subparagraph B.2. exempts spent pickle liquor that is reused in wastewater treatment at a facility holding a NPDES permit from all but the evaluation, disclosure, manifest, annual reporting, proper management and outdoor storage requirements of the hazardous waste rules. The waste exempted by this subparagraph is the same waste exempted by 40 C.F.R. § 261.6(a)(3)(i) from the EPA hazardous waste regulations. Spent pickle liquor is generated in



the pickling of iron and steel products prior to the application of a final surface coating or finish. The resulting waste liquor is highly corrosive and also is contaminated with toxic metals. Spent pickle liquor is often used beneficially in wastewater treatment as a phosphorous precipitant and as a sludge conditioner. In adopting the spent pickle liquor exemption the Agency is relying on EPA's investigation and expertise. The basis for the EPA exemption is set forth at 46 F.R. 44970 - 44973 (September 8, 1981). EPA exempts this waste from all regulation. However, because of the highly corrosive nature of this waste (EPA research indicates a pH of <1) the Agency believes that it should not be exempt from all regulation. The proposed rule would subject spent pickle liquor to the same requirements, except for the specific storage requirements, that are discussed on pp. 44-45, supra. with respect to the wastes exempted by Subparagraph B.

As originally proposed 6 MCAR § 4.9129 B.1. and B.2. allowed spent pickle liquor reused at a wastewater treatment facility and wastes that are hazardous due to characteristics other than toxicity that were to be beneficially reused or recycled to be transported without a manifest. The Agency received numerous comments objecting to this exception. Under the existing hazardous waste rules all hazardous waste regardless of its designation must be manifested. Although the proposed exemption

covered only a small portion of the hazardous wastes which are reused or recycled, the commenters recommended that all wastes be manifested so that the wastes could be tracked and so that the manifests could be used as an auditing system to verify that the wastes were actually shipped to and received by the recycling facility. The Agency has received no indication that the use of manifests for wastes which are to be reused or recycled has proved unduly burdensome especially since the U.S. DOT requires shipping papers or bills of lading. Therefore, the Agency decided to retain the existing system requiring that all wastes be manifested during transportation and, at its December 20, 1983 meeting, the Agency Board amended the rule accordingly. At the same time the Agency also amended subparagraphs B.1. and B.2. to add certain requirements such as recordkeeping and the county programs which had been inadvertently omitted from the original version to the requirements applicable to wastes covered by these subparagraphs.

Subparagraphs B.3.- B.5. apply to the same wastes as 40 C.F.R. Part 261.6(b). as well as to wastes which are toxic pursuant to 6 MCAR § 4.9132 and listed wastes which are only ignitable and are to be burned for heat recovery. These paragraphs require generators of such wastes to comply with all of the generator, transporter, and facility requirements except for certain facility standards and permits. The storage of such waste is subject to the hazardous waste facility permit procedures. The Agency

believes, based on experiences gained by working with the existing program, that subparagraphs B.3.- B.5. will encourage the beneficial use, reuse, recycling, and reclamation of these wastes while protecting human health and the environment from mismanagement.

The intent of paragraphs B.3. - B.5. is two-fold. First, wastes listed in 6 MCAR § 4.9134, sludges and wastes which are toxic pursuant to 6 MCAR § 4.9132 F. which are not to be burned, and wastes listed in 6 MCAR § 4.9134 for ignitability only and which are to be burned for heat recovery are subject to the same standards EPA imposes on sludges and listed wastes. The Agency believes the EPA standards are acceptable for regulating the four types of wastes listed in subparagraphs B.3. and B.4. and the corresponding methods of use, reuse, recycling and reclamation.

The Agency however, concluded that more stringent requirements must be in place for sludges, wastes listed in 6 MCAR § 4.9134 for characteristics other than ignitability, and wastes which are toxic pursuant to 6 MCAR § 4.9132 F. which are to be burned for heat recovery. Subparagraph B.5. is reasonable because it recognizes that, depending upon the type of hazardous waste, burning for heat recovery is a potentially harmful method of use and reuse. The Agency believes that 40 C.F.R. § 261.6 does not sufficiently regulate burning because it exempts facilities which incinerate listed and toxic hazardous wastes from the technical facility standards for such operations. The burning of such wastes may emit compounds not regulated by the Clean Air Act. Therefore,

subparagraph B.5. requires that, in addition to the requirements imposed in subparagraphs B.3. and B.4., the facility must also have an air quality permit and comply with the technical standards for the thermal treatment of hazardous waste provided in 6 MCAR §§ 4.9280-4.9422.

The Agency determined that the burning facility could be adequately regulated under an Air Quality Permit in contrast to a more burdensome and costly Hazardous Waste Facility Permit upon the condition that the facility meet the 99.99% destruction/removal standards prescribed in the thermal treatment performance standards contained in proposed rule 6 MCAR § 4.9321. This standard would better address the emissions of organic compounds and heavy metals than the current Air Quality rules or the EPA regulations. The Agency believes this approach is a reasonable approach to prevent damage to human health and the environment while promoting incineration of hazardous waste for its heat value.

Paragraph C. applies to out-of-state generators and recognizes the unique situation of those out-of-state companies who want their wastes to be used, reused, recycled or reclaimed by methods other than burning in Minnesota. The Agency believes it is reasonable to encourage out-of-state companies to have their wastes managed in such a way by not subjecting them to Minnesota's hazardous waste disclosure and annual reporting requirements since they are subject to either the hazardous waste program in the company's home state or to the EPA regulations.

In summary, 6 MCAR § 4.9129 closely corresponds to 40 C.F.R. § 261.6. However, the outdoor storage of EP toxic wastes and the burning of listed wastes, sludges, and toxics in boilers and heat recovery incinerators is more fully regulated in order to prevent human health and environmental damage. This rule is reasonable since it promotes beneficial use, reuse, recycling, and reclamation of hazardous wastes, while recognizing that exemptions from regulation must be based upon the type of hazardous waste and the method of use, reuse, recycling, or reclamation.

6 MCAR § 4.9130

6 MCAR § 4.9130 sets forth the standards applicable to empty containers. This rule defines when a container or inner liner is empty and exempts the hazardous waste remaining in an empty container or inner liner from regulation under the hazardous waste rules. This rule is taken from 40 C.F.R. § 261.7. The Agency is relying on the EPA background information relating to empty containers as support for this rule. This information is set forth at 45 F.R. 78524 - 78529 (November 25, 1980) and 47 F.R. 36092 - 36097 (August 18, 1982).

6 MCAR § 4.9002 D. - H.

The provisions of existing rule 6 MCAR § 4.9002 D.-H. are incorporated into proposed rules 6 MCAR § 4.9132, 4.9205 - 4.9209 and are discussed in connection with those rules.

6 MCAR § 4.9131

6 MCAR § 4.9131 lists the criteria the Agency will use to list a waste as hazardous. This rule is referenced in 6 MCAR § 4.9104 B. as the criteria to be used by a generator in petitioning to delist his particular waste. The provisions of paragraphs A. - C. have been adopted from 40 C.F.R. § 261.11. 6 MCAR § 4.9131 D. provides for the Director's recommendation that a specific generator's waste be declared hazardous. This rule is renumbered existing rule 6 MCAR § 4.9002 H.2. The rule is reasonable because the criteria are based on studies and data concerning hazardous factors of chemicals, and incidents where a waste or chemical has caused substantial harm to human health or the environment when improperly managed. The Agency is relying on the EPA background document on criteria for listing hazardous waste listed in Part VIII. as support for this rule.

6 MCAR § 4.9132

6 MCAR § 4.9132 defines the characteristics which make a waste hazardous. A waste which is not specifically excluded from regulation is a hazardous waste if it exhibits any of the characteristics identified in this rule. The existing hazardous waste rules identify the following characteristic for determining if a waste is hazardous: flammable, oxidative, explosive, corrosive,

irritative, bioconcentrative, toxic and carcinogenic. See 6 MCAR § 4.9002 B. In these proposed rules, these characteristics have been incorporated into the hazardous waste characteristics utilized in the EPA regulations.

Paragraph A. is informational and self-explanatory. Paragraph B. defines ignitability and is identical to 40 C.F.R. § 261.21(a)(1),(2),(3) and (b). In the existing rules the characteristic of ignitability comes under the criteria of flammability set forth in 6 MCAR §§ 4.9001 B.10. and 4.9002 E.4. The provisions of the revised rule are substantially the same as the existing rules with the exception of the flash point temperature. Minnesota's existing flammability standard is a flash point of less than 200°F. This value was adopted from the original federal standards. EPA has subsequently chosen 140°F as its cut-off temperature. An examination of U.S. DOT's list of hazardous materials shows only two materials with flash points above EPA's standard of 140°F and in both cases the flash points were only slightly above the 140°F temperature. It is reasonable therefore to lower the flash point temperature from 200°F to 140°F to correspond with EPA's value, because doing so does not introduce any substantial increase in potential exposure to hazardous waste. The Agency is relying on the background material on ignitability utilized by EPA in promulgating its ignitability standard as support for adopting a 140° flash point standard. The documents relied upon are listed in Part VIII.

Paragraph C. defines oxidizers. Oxidizers are included in the EPA ignitability characteristic. The provisions of subparagraphs C.1.a. and C.2. are identical to 40 C.F.R. § 261.21(a)(4) and (b). The provisions of subparagraph C.1.b. are taken from existing rule 6 MCAR § 4.9001 B.28. The Agency has chosen to list this category separately to emphasize that oxidizers and ignitables are not compatible wastes. Inorganic oxidizers are not ignitable; they are suppliers of oxygen and will react with ignitable wastes. Organic oxidizers may be ignitable under some conditions, but the emphasis should be on the oxidizing property because it is the source of the most likely hazard. It is reasonable to make this distinction, because it helps to protect the public and neither enlarges nor diminishes the present state rule nor the EPA regulation.

Certain provisions of Minnesota's present flammability rules are no longer needed and are being deleted. 6 MCAR § 4.9002 E.4. relates to a miscible mixture having a flash point greater-than 200°F and containing components with different volatilities and flash points. The rule requires a second test following the evaporation of a sample at ambient temperature and pressure to 90 percent of its original volume or for four hours, whichever comes first. Thus, if the more volatile component has the higher flash point the waste could be determined to be hazardous on the second test. In discussions with people knowledgeable in the field,



Agency staff have been informed that the occasions where miscible liquids will have decreasing flash points following evaporation are very few and that the requirement for a second test does not serve any useful purpose. It is, therefore, reasonable to delete this provision. 6 MCAR § 4.9001 B.10.a.(1) concerns a mixture of which 99% is a component with a flash point greater than 200°F. This rule is less restrictive than the EPA regulation since a mixture with a flash point below 140°F would not be a hazardous waste if the conditions of this rule are met. Mixtures are governed by proposed rule 6 MCAR § 4.9128. Therefore, because mixtures are covered elsewhere and because the present rule is less stringent than the EPA regulation, it is reasonable to drop the present rule.

Existing rule 6 MCAR § 4.9001 B.10.a.(2) applies to a waste with a flash point between 100-200°F but which will not support combustion. This rule has been dropped because, while the property of supporting combustion will contribute to a waste's hazardous effects, the flash point is the criterion measured. The flash is the principle hazard because the flash may set fire to materials other than the waste itself, including burning a person exposed to the burning (flashing) vapors. Including the property of supporting combustion could add another test procedure, a fire point test, to determine the temperature needed to sustain combustion. The present rule does not define "supporting combustion". Fire points are

usually only a few degrees above the flash point, therefore flash points provide better protection. The flash point is widely used by other agencies as a hazard characteristic. Thus, it is reasonable to drop an apparently less stringent rule when actually no significant change in coverage will result.

Paragraph D. defines corrosivity. The Agency is proposing to adopt the corrosivity provisions from 40 C.F.R. § 262.22 rather than retain the provisions of existing rules 6 MCAR §§ 4.9001 B.5. and 4.9002 E.6. Since the pH test is only an indicator and not a direct measure of corrosivity and some wastes with extreme pH limits do not corrode eye tissue, the Agency believes that more recent data and experience with the existing rule justifies the amendment of the current pH limits of 3.0 and 12.0. In raising the alkaline pH level from 12.0 to 12.5 and lowering the acidic pH level from 3.0 to 2.0 the Agency is relying on the EPA background documents on corrosivity. In addition Economics Laboratories and MACI submitted scientific literature which also supports lowering the acidic pH level from 3.0 to 2.0. These documents are listed in Part VIII.

In addition, the adoption of the federal pH limits creates greater consistency with the federal program, thereby reducing the current problems with the interstate shipment of wastes which are only hazardous in Minnesota. Finally, the Agency has gained significant working experience in terms of corrosive wastes through the disclosure program. It has become evident that the

majority of wastes which are considered corrosive by either the existing state or federal programs are either neutralized and discharged to a wastewater treatment system or shipped to a facility which will beneficially use, reuse, recycle or reclaim the waste.

In summary, the Agency believes the proposed adoption of the federal corrosivity characteristic in lieu of existing state parameters creates greater consistency between the state and federal programs, reduces unnecessary confusion among the regulated community and continues to protect public health and the environment.

Paragraph E. defines reactivity and is identical to 40 C.F.R. § 261.23. The characteristic of reactivity replaces the explosive category of the existing rules. The EPA regulation regulates sulfides and cyanides which are not now regulated by the state rules. In order to obtain authorization, the state rules must be at least as stringent as the federal rules and it is therefore necessary to add the characteristic of reactivity. Even without this requirement, it is reasonable to classify wastes which are normally unstable and readily undergo violent change without deteriorating, which react violently with water, which form potentially explosive mixtures with water, which generate toxic gases when mixed with water, or which will generate toxic gases when exposed to pH's between 2 and 12.5 as hazardous because such

wastes pose a real threat to human health and the environment. In adopting the characteristic of reactivity, the Agency has relied on the background documents on reactivity prepared by EPA in promulgating 40 C.F.R. § 261.23. This material is listed in Part VIII.

Paragraph F. defines toxicity and is taken from existing rules 6 MCAR §§ 4.9001 B.24. and 25. and 4.9002 E.5. The Agency has retained the existing state rule on toxicity because many wastes are hazardous only because of toxicity, and unless these wastes are already included in the listed hazardous wastes they will not be controlled under other rules. This rule is especially needed to cover new and currently unlisted wastes which are toxic.

There are four types of toxicity in the existing rule. Only aquatic toxicity has been dropped from the proposed revisions. It is reasonable to drop the aquatic toxicity criteria from the hazardous waste rules because wastes which are hazardous because of aquatic toxicity are covered by other programs which provide that (1) liquids cannot be put in sanitary landfills (solid waste program, solid waste rules), (2) wastes cannot be dumped on land without a permit (solid waste program), (3) wastes cannot be discharged into surface waters (surface water and/or NPDES program) and (4) wastes discharged to a municipal sewer are subject to sewer authority and pretreatment rules and, indirectly, the NPDES programs.

Paragraph G. defines Extraction Procedure (EP) toxicity and is based on existing rules 6 MCAR § 4.9002 B.2. and E.2. Proposed subparagraphs G.1. and G.2. are identical to 40 C.F.R. § 261.24. EP toxicity tests evaluate a waste in terms of the amount of a pollutant that is extracted and that can therefore be expected to be present in the leachate from the waste. The concentration is then compared with drinking water standards and, if more than 100 times the standard, the waste is defined as hazardous. This is based on the assumption that if the waste is mismanaged, for example by disposal in a permitted municipal landfill, the leachate would be diluted 100 times before it reaches a drinking water well. If any component exceeds 100 times its drinking water standard, the waste is a pollutant and a hazardous waste. In existing rule 6 MCAR § 4.9002 B.2, List 2, the emphasis is on bioconcentration and both drinking water standards (100X) and surface water standards (10,000X) were used. The use of surface water standards to set bioconcentrative standards involves the aquatic environment. This standard has been deleted because, as discussed above, other programs control those wastes.

Exhibit 6 MCAR § 4.9132 G.3-1 is taken from Table 1 of 40 C.F.R. Part 261 and includes many of the compounds found in existing rule 6 MCAR § 4.9002 B.2. Those wastes listed in 6 MCAR § 4.9002 B.2. but not listed in Exhibit 3-1 are covered elsewhere

in the proposed rules. Aldrin, Chlordane, DDT, Endrin and Heptachlor which are listed in the existing rule are now included as listed wastes in proposed rule 6 MCAR § 4.9134 D.5. and D.6. PCB wastes are covered in the revised rules at 6 MCAR § 4.9134 E. Mirex is not a listed waste but is hazardous by the toxicity test. It is reasonable to adopt the EPA list without including all of the components presently found in 6 MCAR § 4.9002 B.2., List 2, since these omitted wastes are covered elsewhere.

The Agency has relied on EPA's background documents on EP Toxicity in proposing to adopt 6 MCAR § 4.9132 G. These documents are listed in Part VIII.

6 MCAR § 4.9133

Rule 6 MCAR § 4.9133 sets forth a procedure whereby wastes which fail the toxicity characteristics may be exempted from regulation if the generator can demonstrate that the waste for which the exemption is sought does not pose a hazard to public health or the environment. The procedure is similar to the delisting procedure set forth in 6 MCAR § 4.9104 B. The factors to be considered in determining whether a waste should be exempt are the same as the criteria set forth in rule 6 MCAR § 4.9131 A.3. for listing wastes as toxic. It is reasonable to use the same factors since if the generator can show that the waste does not

meet the criteria which would cause it to be listed as a toxic hazardous waste, it is unlikely that the waste will present a hazard to human health or environment even though it had failed one of the characteristic tests.

6 MCAR § 4.9134

Rule 6 MCAR § 4.9134 contains lists of wastes which are hazardous wastes. There are four lists: Paragraph B. lists hazardous wastes from non-specific sources; Paragraph C. lists hazardous wastes from specific sources; Paragraph D. contains two lists of hazardous wastes from discarded commercial products, off-specification species, containers and spill residues. The provisions of 6 MCAR § 4.9134 A.-D. and the lists of wastes contained therein are identical to the provisions of 40 C.F.R. §§ 261.30, 261.31, 261.32 and 261.33.

EPA has made a determination that the wastes listed in paragraphs B., C. and D. are hazardous based on the criteria for listing hazardous waste set forth at 40 C.F.R. 261.11 (a)(1) and (3). These criteria are the same criteria that are contained in proposed rule 6 MCAR § 4.9131 A.1. and A.3. In adopting these lists the Agency has relied on the extensive research and background material gathered by EPA in promulgating the provisions of 40 C.F.R. Part 261. The documents set forth a summary of EPA's basis for listing each identified waste stream; a brief

description of the industry or industries generating the waste stream; a description of the manufacturing process which generates the waste and identification of waste composition, constituent concentrations and annual quantity generated; a discussion of waste management methods; and a summary of the adverse health effects of each of the waste constituents of concern. These documents are listed in Part VIII. Because of the extensive work done by EPA in adopting these lists, it is reasonable to adopt these lists in the same form as promulgated by EPA.

6 MCAR § 4.9134 E. governs the management of PCB wastes. This rule is intended to clarify the interaction of the existing Certificate of Exemption Rules for PCB's, 6 MCAR § 4.8038, with the hazardous waste rules. PCB wastes are covered by existing rule 6 MCAR § 4.9002 B. The hazardous waste rules as revised bring PCB's and PCB items into the hazardous waste management system only at the point where the PCB waste is going to be managed for disposal. The Certificate of Exemption rules cover the use, reuse and storage of PCB's and PCB items.

Coverage of PCB wastes has been expanded from wastes containing 500 parts per million PCB in the present rule to wastes containing 50 parts per million PCB in the proposed rule. This is reasonable because 50 parts per million is equivalent to the coverage of the federal system. This rule exempts PCB wastes from the 90-day accumulation time limit since the federal



regulations do not place a time limit on their storage. In addition, the storage of PCB wastes is exempt from the hazardous waste storage facility permit process and most of the hazardous waste storage facility standards. The Agency believes this approach is reasonable since the storage of PCB wastes is subject to 1) the federal storage requirements of 40 C.F.R. § 761.65; 2) the marking and labelling requirements which are placed on all hazardous wastes; and 3) the personnel training, contingency planning and emergency procedure standards required of all generators and hazardous waste facilities. As a result, the storage practices will be sufficient to protect the public health and environment.

The proposed rule also clarifies the manifesting requirements for PCB shipments by requiring a manifest for all PCB waste shipments except those shipments between the owner's premises via the owner's own vehicle. This clarification is intended to require the manifest between the generator and the receiving facility, but not between a site where the PCB contaminated item is being withdrawn from service and the generator's site if the generator is using his own vehicles to transport the waste.

The proposed rule also addresses high efficiency boilers which burn PCB wastes having PCB concentrations below 500 parts per million. This type of facility is exempt from the hazardous waste permitting procedures, the accumulation time limits, and most of

the standards for hazardous waste facilities. Under the proposed rule the facility would be subject to general facility standards and the air emissions are subject to an Air Quality permit under existing Agency rules. The Agency believes that this approach to high efficiency boilers will properly regulate the storage of PCB wastes in a manner which will ensure safe handling and the use of sound containers and tanks. Further, the Agency does not perceive a need to alter the regulation of the facility's air emissions from the existing air quality program to the hazardous waste program.

In summary, the Agency believes the proposed PCB waste rule clarifies the interaction of the existing Certificate of Exemption program and the hazardous waste rules. The approach taken has been designed to regulate PCB wastes when they are intended for disposal and is sufficiently stringent to protect public health and the environment.

6 MCAR § 4.9135

Rule 6 MCAR § 4.9135 assigns a hazardous waste number to small amounts of unrelated chemicals as described in 6 MCAR § 4.9211 D. Rule 6 MCAR § 4.9211 D. permits a person who produces a waste from a laboratory or pilot plant that is a mixture of small amounts of unrelated chemicals to declare the waste hazardous and avoid having to test the mixture. Since existing state and federal

rules require the waste's hazardous waste number to be listed on the manifest when the waste is shipped, it is reasonable to assign such a number to a collection of small amounts of wastes which will usually be a variety of characteristic hazardous wastes and listed hazardous wastes.

6 MCAR §§ 4.9136 and 4.9137

6 MCAR §§ 4.9136 and 4.9137 list the constituents which caused wastes to be listed as hazardous in rule 6 MCAR § 4.9134. These rules are identical to Appendix VII and Appendix VIII of 40 C.F.R. Part 261. It is reasonable to include these lists so that generators will know the constituent which caused their waste to be listed and will therefore be able to determine if the waste produced at their facility may qualify for an exemption pursuant to 6 MCAR § 4.9104 B.

Chapter Two contains provisions from existing rule 6 MCAR § 4.9002. However not all of the language of rule 6 MCAR § 4.9002 is being retained. The provisions of 6 MCAR § 4.9002 B.1., 3. and 5. have been deleted. These provisions list certain wastes that are hazardous. The wastes which are listed in these rules are covered in proposed rules 6 MCAR §§ 4.9132, 4.9134 and 4.9135. Therefore, 6 MCAR § 4.9002 B.1., 3. and 5. are no longer needed and it is reasonable to repeal these provisions.

The provisions of 6 MCAR § 4.9002 D. have been renumbered as 6 MCAR §§ 4.9205 and 4.9206 and are found in Chapter 3. The

provisions of 6 MCAR § 4.9002 E. have either been repealed as unnecessary or have been included in proposed rule 6 MCAR § 4.9132. The provisions of 6 MCAR § 4.9002 G. have been renumbered as 6 MCAR §§ 4.9207 and 4.9208.

Rule 6 MCAR § 4.9002 H.1. has been deleted. It is reasonable to delete this paragraph because it is substantively the same as Minn. Stat. § 116.091 and it is unnecessary to have this provision included in both the statutes and the rules. Rule 6 MCAR § 4.9002 H.2. and H.3. has been renumbered as 6 MCAR §§ 4.9131 D. and 4.9209.

D. Chapter Three: Standards Applicable to Generators of Hazardous Waste, 6 MCAR §§ 4.9200 - 4.9222

The proposed rules in Chapter Three set forth the requirements applicable to generators of hazardous waste. This chapter contains provisions from existing hazardous waste rules 6 MCAR §§ 4.9002 D.-H., 4.9003, and 4.9008. In addition this chapter incorporates the EPA regulations applicable to generators which are found at 40 C.F.R. Part 262. In adopting the federal regulations the Agency is relying on the background documents prepared by EPA when it promulgated Part 262. These documents are listed in Part VIII.

6 MCAR § 4.9200

Proposed rule 6 MCAR § 4.9200 lists the classes of persons to whom the generator standards are applicable. The rule incorporates the provisions of 40 C.F.R. §§ 262.10(a) and (f) and 263.10(c). It is reasonable to have a rule on applicability so that persons will know if they are covered by the provisions of Chapter Three without reading the entire chapter. In addition to generators, the rule requires transporters who either act as importers or who mix hazardous wastes of different shipping descriptions and facility operators who initiate shipments of hazardous waste to comply with the generator standards. This provision is reasonable since under these circumstances transporters and operators are fulfilling the role of generators and producing hazardous wastes which require proper management.

6 MCAR § 4.9201

6 MCAR § 4.9201 is renumbered existing rule 6 MCAR § 4.9003  
B. This rule requires persons producing hazardous waste to have financial resources adequate to insure proper management as prescribed by 6 MCAR § 4.9100-4.9560 and the hazardous waste facility permit procedures.

6 MCAR § 4.9202

6 MCAR § 4.9202 exempts the generator who treats, stores, or disposes of hazardous waste on-site from certain generator

requirements such as manifesting shipments and pretransport provisions. This rule incorporates the provisions of 40 C.F.R. § 262.10(b) into the state rules with the additional requirement that the generator submit a hazardous waste disclosure. Since the waste never leaves the site, it is reasonable to exempt the generator from irrelevant requirements. However, the rule requires the generator to submit a disclosure and comply with all applicable technical facility standards and the permit procedures. As a result, the generators' activities will be fully known by the Agency and properly regulated to protect human health and the environment.

6 MCAR § 4.9203

6 MCAR § 4.9203 is identical to 40 C.F.R. § 262.10(c) and applies to persons who import hazardous waste into Minnesota from a source outside the United States. It is reasonable to regulate an importer of hazardous waste as a generator in order to insure that the waste is properly managed. The absence of this rule would allow a hazardous waste generated in another country to enter the state without there being a domestic generator who would be responsible for proper management.

6 MCAR § 4.9204

6 MCAR § 4.9204 is identical 40 C.F.R. § 262.10(d). This rule exempts farmers from the requirements of 6 MCAR

§§ 4.9100-4.9221 and 4.9223-4.9560 and the hazardous waste facility permit procedures. However, farmers are required to comply with 6 MCAR § 4.9222, which requires the triple rinsing of waste pesticide containers and the proper disposal of the waste on-site. This rule is reasonable since it adequately regulates waste pesticides generated by farmers in such a way as to protect human health and the environment while not placing unnecessary administrative, technical, and financial burdens upon farmers.

6 MCAR § 4.9205

6 MCAR § 4.9205 governs the evaluation of waste by a generator. This rule incorporates the existing requirements of 6 MCAR § 4.9002 D. and the provisions of 40 C.F.R. § 262.11. Paragraph A. is renumbered existing rule 6 MCAR § 4.9002 D.1. This paragraph requires a generator to evaluate his waste to determine whether it is hazardous as defined in 6 MCAR §§ 4.9128-4.9137. This is reasonable since a generator would not know whether his waste is subject to the hazardous waste rules without such an evaluation.

Paragraph B. incorporates the provisions of 40 C.F.R. § 262.11(b) and (c). This paragraph sets forth the method by which and the criteria for which a waste is to be evaluated. In addition it permits a generator to use his knowledge of the waste or published literature in lieu of testing for the evaluation if

such knowledge or literature is adequate. The requirements of this paragraph are substantially the same as the requirements of existing rule 6 MCAR § 4.9002 D. However, it is reasonable to adopt the federal language to account for other amendments to these rules.

Paragraph C. is identical to 40 C.F.R. § 261.3(c)(2). This paragraph provides that a waste originating from a hazardous waste treatment, storage, or disposal facility is a hazardous waste if it meets the criteria of 6 MCAR §§ 4.9128-4.9137. It is reasonable to require that the hazardous waste originating from hazardous waste processing facilities be regulated under the hazardous waste rules in order to ensure proper management of the waste.

6 MCAR § 4.9206

6 MCAR § 4.9206 governs the timing of waste evaluation and is renumbered existing rule 6 MCAR § 4.9002 D.2., D.3., and D.4. This rule has merely been renumbered and no substantive change has been made. 4/

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4/ Although underlined, the language in this rule is existing language and not new language. As originally drafted, the Agency indicated at the appropriate place in Chapter Two that rule 6 MCAR § 4.9002 D.2., D.3., and D.4. had been renumbered as 6 MCAR § 4.9206 and inserted the language at its proposed new location. The Revisor of Statute's office disagreed with this method of drafting. Except for those instances where the provisions of an existing rule appeared in the same order in the proposed rule as they did in the existing rule, the Revisor has shown the existing language as



6 MCAR §§ 4.9207 and 4.9208

Rules 6 MCAR §§ 4.9207 and 4.9208 relate to the submission of evaluation reports following a request by the Director that a generator evaluate his wastes. These rules are renumbered from existing rule 6 MCAR § 4.9002 G. Industry representatives commented that the Director should not be limited to allowing only a 90-day extension period for the submission of the evaluation results. The type of tests to be conducted and workloads upon testing laboratories may prevent compliance with the 90-day extension. Therefore, the Director should be allowed to grant time extensions as needed. The Agency believed this was reasonable and modified the rule by deleting the 90-day limit.

The Agency also agreed with industry comments that a person evaluating a waste for the characteristic EP toxicity should be allowed to submit soft data in lieu of actual testing of the waste when the data is sufficient to determine whether the waste displays this characteristic. The Agency allows generators to use

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(Footnote No. 4 continued from page 72)

stricken at the place where it originally appeared and underlined as new language at the place where it appears in the proposed rule. The Revisor's office indicated that in spite of the strikeouts and underlining, rules that are merely being moved and renumbered are to be treated as existing language. Therefore for all rules, or paragraphs thereof, where this occurred the Agency is providing only a brief description of the rule, the existing rule number and a statement that the rule has been renumbered with no substantive change.

their knowledge of a waste in light of the processes and materials for which it is generated used as a tool for hazardous waste evaluation pursuant to proposed rule 6 MCAR § 4.9205 B.2.b. Therefore, it is reasonable to allow a generator to submit soft data when requested by the Director to submit information on the evaluation of whether a waste displays the characteristic of EP toxicity. In addition to these changes, the rule has been modified to conform to other amendments to the hazardous waste rules. However, these amendments make no substantive changes to the existing rule.

6 MCAR § 4.9209

6 MCAR § 4.9209 provides the Director with the authority to recommend that a specific generator's waste be classified as hazardous based upon the criteria of 6 MCAR § 4.9131 D. This rule is renumbered from existing rule 6 MCAR § 4.9002 H.2. and H.3. The rule has merely been renumbered and no substantive changes have been made.

6 MCAR § 4.9210

6 MCAR § 4.9210 sets forth the special requirements applicable to generators of small quantities of hazardous waste. The existing hazardous waste rules do not have any exemption for small quantity generators of hazardous waste. It is the Agency's belief, based on experience gained by working with the

existing hazardous waste program, that hazardous waste from small quantity generators presents significant risk and should be managed in an acceptable manner. The Agency does not believe that wastes should be exempted from regulation based only on the amount generated.

EPA exempts hazardous wastes from small quantity generators from nearly all regulation. Under the federal regulations small quantity generators do not have to notify EPA of the hazardous wastes produced, manifest shipments, properly label or mark the wastes, file annual reports, or comply with facility standards or permit procedures. In addition, the federal regulations allow small quantity generators to dispose of their hazardous waste in a sanitary landfill. The hazardous waste of a small quantity generator poses the same hazard to public health and the environment as the hazardous wastes of a large generator if improperly managed. Therefore, the Agency believes it is not reasonable to permit disposal of hazardous wastes, even in small quantities, in sanitary landfills. In addition, the Agency believes that a small quantity generator should be required to manifest wastes and to file a disclosure and an annual report.

Paragraph A. incorporates the provisions of 40 C.F.R. § 261.5(a) and (e), which establish the quantities of hazardous waste which a person may generate on a monthly basis and still qualify for the small quantity exemption. This rule establishes different exclusion levels based on the degree of hazard of the

waste. The Agency believes that it is reasonable to adopt the generation levels established by EPA and is relying on the background documents on small quantity generators prepared by EPA as support for this paragraph. Those documents are listed in Part VIII.

Paragraph B. exempts a small quantity generator from certain requirements of the hazardous waste rules if he complies with the provisions of this rule. Paragraph C. specifies that a small quantity generator loses the exemptions if, in any calendar month, the generator produces quantities of hazardous waste in excess of those monthly generation limits which define a small quantity generator. Paragraph D. incorporates provisions from 40 C.F.R. § 261.5(f) and allows a small quantity generator to accumulate hazardous waste on-site up to the small quantity monthly generation limits. If a small quantity generator accumulates quantities in excess of the quantity limits, the waste must be managed as though under full regulation, although the generator would not permanently lose his small quantity generator status.

Paragraph E. specifies the management requirements with which small quantity generators must comply. Subparagraph E.1. requires small quantity generators to evaluate their wastes to determine whether they are hazardous. This subparagraph corresponds to 40 C.F.R. § 261.5(g)(1). It is reasonable to require a small quantity generator to determine the hazardous characteristics of his waste since these characteristics determine the quantity limit under which the small quantity generator may operate.

Subparagraphs E.2. and E.6. require a small quantity generator to submit a hazardous waste disclosure and meet various recordkeeping and reporting requirements. These requirements are reasonable because they provides the Agency with a mechanism to approve, modify or reject the small quantity generator's proposed method of management for each hazardous waste produced and to ensure that wastes considered to be non-hazardous by the generator are non-hazardous. Further, the disclosure and annual report requirement for small quantity generators allows the Agency to gather information regarding the types and quantities of hazardous waste produced by small quantity generators on an annual basis. This information may be combined with the same data gathered for large generators and ultimately yield statewide figures necessary for planning the number, size and types of hazardous waste facilities required for Minnesota.

Subparagraph E.4. requires small quantity generators to use only licensed or permitted transporters and hazardous waste facilities. This subparagraph also requires that the person in control of the waste must notify the Agency as soon as possible about a spill and that small quantity generators must recover spilled hazardous waste as rapidly as possible. Both requirements help to ensure that hazardous waste is managed in a manner that does not harm human health and the environment and do not impose any undue burden on small quantity generators.

Subparagraph E.5. requires small quantity generators to comply with certain minimum outdoor storage requirements. These requirements are intended to prevent inadvertent contact with the waste, loss of the waste if the containers should fail and the buildup of heat and pressure in containers of ignitable wastes. These requirements are necessary to ensure the proper outdoor management of small quantities of hazardous waste.

40 C.F.R. § 261.5 exempts small quantity generators from the manifest requirements of the federal regulations. The existing state rules require small quantity generators to manifest their waste. As originally proposed, paragraph E. substituted a log of hazardous waste shipments for the manifest for small quantity generators. During the comment period following publication of the proposed rules, the Agency received numerous comments, particularly from metropolitan area county officials, that the requirement that small quantity generators manifest their waste should be retained. These comments indicated that a substantial portion of the waste in the metropolitan area is generated by small quantity generators. Without manifests to assure that the waste is being properly handled, much of this waste could be improperly disposed of. For the manifest system to work most effectively as a tracking and auditing system, it is necessary for the Agency to receive manifests on all shipments of hazardous waste. Small quantity generators will not be shipping hazardous waste often because they generate only small quantities

each month. Since either a shipping paper or bill of lading would need to accompany the shipment anyway, and since a manifest can be used in lieu of a shipping paper, the requirement that a manifest be used should not be unduly burdensome. Therefore, the Agency has amended the proposal rules to retain the existing requirement that small quantity generators use shipping papers.

Subparagraph E.7. provides the small quantity generator with those options for disposal or use, reuse, recycling or reclamation which are environmentally sound. This subparagraph corresponds to 40 C.F.R. § 261.5(g). However, the federal provision which allows hazardous waste disposal in a sanitary landfill has not been included because it is environmentally unsound and therefore unreasonable. In adopting its regulation EPA estimated that only 1% of the nation's hazardous waste would qualify for the small quantity generator exemption and the sanitary landfill disposal option. However, estimates for Minnesota indicate that between 10% and 25% of the hazardous waste generated would be eligible for the small quantity generator exemption. Therefore, subparagraph E.7. allows only storage, treatment or disposal at a facility with a hazardous waste facility permit or the beneficial use, reuse, recycling, or reclamation of the waste at a facility which is in compliance with 6 MCAR § 4.9129. In addition, the Agency concurred with public comments that it is reasonable to allow a small quantity generator to send his waste to another site belonging to the same owner for

consolidation if the other site is in compliance with the hazardous waste rules and incorporated such a provision into this rule.

Subparagraph E.8. is informational and notifies the small quantity generator that the applicable provisions of the U.S. DOT regulations also apply.

Paragraph F. incorporates the provisions of 40 C.F.R. § 261.5(h) and allows a small quantity generator to mix hazardous waste with nonhazardous waste in accordance with 6 MCAR § 4.9128 B. This is reasonable since it provides the small quantity generator with the same mixture provisions as a fully regulated generator.

In summary, Rule 6 MCAR § 4.9210 requires that hazardous waste from small quantity generators must be managed in a more controlled manner than the requirements of 40 C.F.R. § 261.5. The rule recognizes that the hazardous wastes produced by small quantity generators may potentially cause the same environmental problems as the hazardous wastes produced by large quantity generators if they are mismanaged. The approach taken in 6 MCAR § 4.9210 is reasonable since it enables tracking and ensures proper management of hazardous waste to protect human health and the environment.

6 MCAR § 4.9211

6 MCAR § 4.9211 is renumbered existing rule 6 MCAR § 4.9003 C. through F. The existing rule has been modified by the



inclusion and exclusion of specific administrative requirements based upon comments received from the public. Existing paragraph C., which has been renumbered as 6 MCAR § 4.9211 A., has been modified by eliminating the portion which addressed used crankcase oil. This modification is necessary because used crankcase oil is exempted from the provisions of these rules by 6 MCAR § 4.9128. Although a sentence specifying that a disclosure must contain a management plan for each waste produced has been added, this has always been a requirement (see 6 MCAR § 4.9003 D.1.i.) and this modification merely clarifies the existing rule.

Paragraph B. is renumbered existing rule 6 MCAR § 4.9003 F. and contains no substantive change.

Paragraph C. is renumbered existing rule 6 MCAR § 4.9003 D. The rule sets forth the required content of the disclosure. Several of the provisions of the existing rule have been reordered and some of the language has been modified to make the rule conform to other amendments to the hazardous waste rules and to make the rule more understandable. The proposed rule is substantively unchanged from the existing rule except for repealing the past management plan provision. The past management plan was designed to gather information regarding a generator's hazardous waste management during the preceding year. Since generator disclosures have now been on file for a significant period of time, the Agency already has this information. Therefore, it is reasonable to repeal the past management requirement.

Paragraph D. is renumbered existing rule 6 MCAR § 4.9003 D.2. This rule has been modified to make this provision conform to other amendments to these rules and to clarify the intent of the rule in order to gain more accurate information. There has been no substantive amendment to this provision.

Paragraph E. is identical to existing rule 6 MCAR § 4.9003 D.3. and has only been renumbered.

Paragraph F. is existing rule 6 MCAR § 4.9003 E.1. This provision has been amended to require the generator to submit the disclosure or any needed amendments thereto within 90 days of the effective date of the amended hazardous waste rules, if hazardous waste is being produced on that date. The present rule allows one year. Since a generator is already out of compliance with 6 MCAR § 4.9003 E. if he is currently producing a hazardous waste and has not yet filed a disclosure, 90 days is a reasonable amount of time for generators to submit disclosures or amended disclosures in light of the hazardous waste rule revisions.

Paragraph G. is renumbered existing rule 6 MCAR § 4.9003 E.2. The rule has been modified by replacing the requirement that an out-of-state generator who wants to ship waste into Minnesota for treatment or disposal must submit a complete disclosure with a requirement for submission of a written notification providing more limited information. This provision applies only to waste being shipped to a Minnesota facility by an out-of-state

generator. The purpose of the notification is to allow a determination by the Agency of whether the waste being shipped may properly be handled by the receiving facility. A hazardous waste disclosure, which contains information on all waste produced by a generator regardless of whether it is hazardous, provides more information than is needed for this determination. By proposing this modification the paperwork burden on out-of-state generators is reduced while the Agency's ability to ensure proper hazardous waste management is maintained. The only other substantive changes in the rule are the reduction of the time periods for filing a disclosure for a new hazardous waste from 90 to 75 days and for treating or transporting a hazardous waste after submission of a disclosure from 30 to 15 days. The modified time periods provide adequate time for the generator to prepare the disclosure and for the Agency staff to review the disclosure and still allow the processing of the paper work to be speeded up.

Rule 6 MCAR § 4.9003 E.3. has been replaced by proposed rule 6 MCAR § 4.9218 which requires a generator to submit an annual report to the Agency Director. Rule 6 MCAR § 4.9003 F. has been renumbered as 6 MCAR § 4.9211 B. Rule 6 MCAR § 4.9003 G. has been replaced by 6 MCAR § 4.9212 A. and it is therefore reasonable to repeal this unneeded provision.

Paragraph H. is a new provision which places into the rules an ongoing administrative policy of approving, requesting additional information, or requiring modification of hazardous waste disclosures. The Agency's experience with the existing disclosure program indicates that additional information had to be requested for a majority of the disclosures reviewed to date because the information supplied was incomplete. This additional information has demonstrated that wastes reported to be nonhazardous were indeed hazardous, or that the generator's method of management was incomplete or not established at all. Therefore, the disclosure approval process is needed and is a reasonable approach to protect human health and the environment as well as help generators comply with the rules. Because this is an existing administrative practice, it will not place any additional burden on the regulated community.

Paragraph I. directs the generator to inform the Agency of any hazardous waste management changes in the next annual report following the submission of the disclosure. This provision is reasonable because the purpose of the generator annual report is to maintain the currency of the Agency's information regarding quantities and management of hazardous waste.

Paragraph J. sets forth requirements for the one-time disposal of hazardous waste. The Agency recognizes that applying all of the hazardous waste rules to one-time only generators is unnecessary and would be unduly burdensome.

Paragraph J. is designed to apply those requirements necessary to ensure proper management of the waste while exempting the generator from such requirements as contingency planning and annual reporting. This approach is reasonable since it provides a partial exemption from regulation and thus relieves the one-time generator of unnecessary paperwork while still protecting human health and the environment.

6 MCAR §§ 4.9212 and 4.9213

Proposed rules 6 MCAR §§ 4.9212 and 4.9213 relate to the preparation and use of manifests. These rules are based on the provisions of 40 C.F.R. §§ 262.20 - 262.23 and existing rule 6 MCAR § 4.9008 C. and E. The rationale behind the federal regulations is set forth at 43 F.R. 58971 - 58974 (December 18, 1978) and 45 F.R. 12728 - 12730 (February 26, 1980). The existing hazardous waste rules contain provisions on the preparation and use of shipping papers. Under the EPA regulations the shipping paper is called a manifest. The Agency is adopting the federal terminology and the document that is referred to as a shipping paper in the existing rules is referred to as a manifest in the proposed rules. The requirements of the proposed rules are substantively the same as the requirements of the existing state rules. However the proposed rules have been reworded to adopt, whenever possible, the federal language. Shipments of hazardous waste frequently travel across state borders. If each state had

unique manifest requirements, multiple versions of these shipping papers would be required. Now that EPA has established a national manifest system it is reasonable to have a nationally acceptable and uniform manifest system. Therefore, it is reasonable to adopt the EPA regulations.

6 MCAR § 4.9212 sets forth the general requirements for a manifest. Paragraphs A., B., C. and D. are essentially the same as 40 C.F.R. §§ 262.20(a), (b), (c). and (d) with the addition of a requirement that the manifest may also designate a reuse/recycle facility. Paragraph E. merely defines a permitted facility. This provision is consistent with the definition of permitted facility used elsewhere in these rules and in the EPA regulations.

Paragraph F. applies to wastes which are classified as hazardous in Minnesota but not in the state to which the waste is being sent. The Agency cannot control the types of wastes accepted at an out-of-state facility. Therefore, it is reasonable to require the generator to ensure that the facility is permitted to accept the "Minnesota specific" hazardous waste by the appropriate state agency. This will help ensure that the Minnesota generator's waste is not being mismanaged in another state.

Paragraphs G. and H. are renumbered existing rule 6 MCAR § 4.9008 C.3. and require the same information as 40 C.F.R. § 262.21. Paragraph G. has been reworded to adopt the federal language. Paragraph H. has merely been renumbered.

Paragraph I. is based on 40 C.F.R. § 262.22 and 6 MCAR § 4.9008 C.2. The paragraph has been reworded but there is no substantive change. This provision is reasonable since it will ensure that the manifest has enough copies for all parties involved including the two copies to be returned to the Agency by the generator and receiving facility.

Rule 6 MCAR 4.9213 A. is identical to 40 C.F.R. § 262.23(a) and (b) with an additional requirement that the generator send a copy of the manifest to the Agency. The requirement that a copy of the manifest be sent to the Agency is taken from existing rule 6 MCAR § 4.9008 E. Rules 6 MCAR § 4.9213 B. and C. are identical to 40 C.F.R. § 262.23(c) and (d) respectively with the additional requirement that a copy of the manifest must also be sent to the Agency. These paragraphs were designed to allow the manifest to be transmitted in such a way as to not affect normal operations followed by water or rail transporters, yet still allow the Agency to track the shipment. Therefore, this rule is reasonable because it takes into account specific situations according to the mode of transport, while protecting human health and the environment.

Paragraph D. is renumbered existing rule 6 MCAR § 4.9008 E.3. Operators of in-state facilities are required by proposed rules 6 MCAR §§ 4.9292 and 4.9392 to send a copy of the manifest, signed by the transporter, to the Director within ten days of the facility's acceptance of the shipment. Since the Agency cannot

directly require an out-of-state facility to comply with this requirement, Paragraph D. has been retained. The existing 35-day requirement for the return of the manifest was increased to 40 days upon the recommendation of industry representatives. Since the five day increase will not create any problems in the tracking of hazardous waste shipments, it is reasonable to honor this request.

Paragraph E. is renumbered existing state rule 6 MCAR § 4.9008 E.5. This provision is identical to the existing rule and is merely renumbered.

6 MCAR § 4.9214

6 MCAR § 4.9214 is identical to 40 C.F.R. §§ 262.30 - 262.33, and also incorporates existing rule 6 MCAR § 4.9003 H.1. and H.3. as amended to correspond to the federal language. Because hazardous waste moves in interstate commerce, it is reasonable to have uniform national requirements for packaging and labeling. This can be accomplished, at least in Minnesota, if the Agency adopts the EPA regulations. It is reasonable to delete 6 MCAR §§ 4.9003 H.2. and I. since, with the adoption of the EPA language, they are duplicative. The packaging, labeling, marking, and placarding requirements of this rule are reasonable since they fulfill U.S. DOT requirements for the transportation of hazardous waste. Paragraph E. is reasonable since generators often load



hazardous waste into transport vehicles in lieu of the transporters. Therefore, the generator should be required to comply with the same loading requirements that are placed on transporters who load hazardous waste on transport vehicles.

6 MCAR § 4.9215

6 MCAR § 4.9215 A. requires the generator to ensure that the transporters and facilities he uses have identification numbers. This requirement ensures that the transporter and facility have notified EPA and the Agency of their existence and are, therefore, being regulated by the hazardous waste program. This requirement is reasonable to ensure that generators use transporters or facilities which manage hazardous waste in a manner which is not threatening human health and the environment. 6 MCAR § 4.9215 B. and C. are renumbered existing rules 6 MCAR § 4.9010 A. and B. with only minor modifications. These paragraphs require the person in control of a hazardous waste to notify the Agency of any hazardous waste spill and require the generator to take the necessary action to recover the spilled material. 6 MCAR § 4.9215 D. and E. are renumbered existing rule 6 MCAR § 4.9003 J.

6 MCAR § 4.9216

6 MCAR § 4.9216 is based on 40 C.F.R. § 262.34 and replaces existing rule 6 MCAR § 4.9004 I. The basis for this rule is discussed at 47 F.R. 1248 - 1251 (January 11, 1982) and documents

referred to therein. This provision allows generators to accumulate hazardous waste on-site or receive hazardous waste from off-site as provided in proposed rule 6 MCAR § 4.9210 E.7.e., without requiring a Hazardous Waste Storage Facility Permit, provided the generator complies with certain requirements designed to protect human health and the environment. The proposed rule is substantially identical to 40 C.F.R. § 262.34, with the exception of additional requirements which relate to outdoor storage.

The current Agency rules provide extensive requirements for outdoor storage. The Agency reviewed these requirements and determined that proposed subparagraphs A.5. through A.7., which relate to outdoor storage, are a reasonable approach to prevent: 1) sudden ignition of ignitable wastes, container failure or explosion due to excessive heat and subsequent pressure build-up which may occur in direct sunlight; 2) the storage of wastes containing free liquids on permeable surfaces or surfaces which may be rendered permeable if the waste were to spill; and 3) potential tampering with the waste or the containment system by not restricting access to the area specifically used for storage.

Existing rule 6 MCAR § 4.9004 I. places a 5,000 gallon storage capacity limit on storage without a hazardous waste facility permit. Industry representatives commented that this rule is difficult to apply to storage in containers and has a significant effect on storage in tanks and rail cars, which usually have a storage capacity exceeding 5,000 gallons. The Agency concurred

with industry's comments and the 5,000 gallon limit has been eliminated. The Agency believes that 6 MCAR § 4.9216 fulfills the EPA requirements for accumulation of wastes on-site without a permit and adequately protects human health and the environment.

6 MCAR § 4.9217 is identical to 40 C.F.R. § 262.40 with the exception that the proposed rules require that the generator must also keep a copy of the disclosure. Existing rule 6 MCAR § 4.9008 E.4. requires that a generator maintain copies of the manifest which have been signed by the transporter for a period of five years while the proposed rule requires that copies be kept for three years. At the public meetings the Agency received comments that records kept pursuant to the Agency's five year retention requirement were the only records of this type which had to be retained beyond three years and that this created records management problems. The Agency is adopting the EPA requirement that records must be kept for the duration of an enforcement proceeding and therefore the EPA three year retention period is sufficient to ensure that manifests are kept for an adequate period for review. The federal regulation is more comprehensive than the existing state rules. Since the state rules must be at least as stringent as the federal rules in order to obtain authorization, it is reasonable to adopt the federal regulation.

6 MCAR § 4.9218

6 MCAR § 4.9218 requires generators to submit annual reports.

This rule replaces existing rule 6 MCAR § 4.9003 E.3., which requires a generator to resubmit a disclosure on an annual basis. As originally promulgated 40 C.F.R. § 262.41 required generators to file annual reports. The Agency reviewed the two approaches and considered the federal and state requirements to be essentially identical in terms of the information required. Therefore, to avoid duplicative paperwork requirements for generators, the Agency decided to adopt the annual reporting requirement of EPA and repeal the disclosure resubmission requirement. EPA has now amended 40 C.F.R. § 262.41 and replaced the annual report with a biennial survey. The Agency, however, believes that the information provided by the annual report allows Agency staff to ascertain that hazardous waste is being handled properly. It also provides information on the total amount of hazardous waste produced annually in Minnesota and aids in planning the number, size and types of hazardous waste facilities required for Minnesota. The annual report does not place any additional burden on generators since existing rule 6 MCAR § 4.9003 E.3. requires the annual submission of disclosures. In fact, because it actually requires less information, substitution of an annual report for an annual disclosure will reduce the paperwork burden on generators.

6 MCAR § 4.9219

6 MCAR § 4.9219 is identical 40 C.F.R. § 262.42 and requires

generators to file exception reports. This provision, coupled with the Agency's computer tracking system, will notify the Agency of hazardous waste shipments which have not arrived at their designated facilities. As a result, Agency staff may investigate the situation and attempt to locate the shipment and identify the circumstances that prevented delivery. This provision is a method of ensuring that transporters deliver shipments of hazardous waste to the facility designated by the generator and that shipments do not get "lost" in transit. The existing rules do not require the filing of exception reports. Since the state rules must be at least as stringent as the federal rules, this rule is necessary for authorization. For purposes of uniformity, it is reasonable to adopt the federal regulation.

6 MCAR § 4.9220

6 MCAR § 4.9220 is identical 40 C.F.R. § 262.43. The provision provides the Director with the authority to require additional reports if the Director believes the generator is producing hazardous wastes which have not been disclosed or are not being managed according to the disclosure statements. This rule is necessary for authorization. For purposes of uniformity, it is reasonable to adopt the federal regulation.

6 MCAR § 4.9221

6 MCAR § 4.9221 is identical to 40 C.F.R. § 262.50. The

existing rules do not have any special provisions relating to international shipments and this rule is therefore necessary for authorization. It is reasonable to adopt the federal regulation to provide uniformity in an area affecting international commerce.

6 MCAR § 4.9222

6 MCAR § 4.9222 is identical to 40 C.F.R. § 262.51. This rule provides a reasonable approach to the unique situation of spent pesticide containers generated by farmers. The Agency does not believe it is reasonable to require farmers to comply with facility standards and permits if they properly triple rinse pesticide containers and dispose of the rinsate on-site according to the application methods provided on the container label. This rule reasonably addresses the special needs of farmers who have spent pesticide containers while adequately protecting human health and the environment.

E. Chapter Four: Standards Applicable to Transporters of Hazardous Waste, 6 MCAR §§ 4.9250 - 4.9259

The proposed rules in Chapter Four set forth the standards applicable to transporters of hazardous wastes. Since transportation of hazardous waste frequently occurs across state boundaries, it is unreasonable to have differing provisions apply in each state. It is therefore reasonable for the state to adopt the EPA and U.S. DOT regulations governing the transportation of hazardous waste.

6 MCAR § 4.9250

6 MCAR § 4.9250 describes those transporters who are subject to the requirements of 6 MCAR §§ 4.9250-4.9259. It is the equivalent of 40 C.F.R. § 263.10(a) and (b) as applied to the State of Minnesota's jurisdiction and is required for Minnesota to obtain authorization from EPA. Paragraph B is renumbered existing rule 6 MCAR § 4.9008 F.1. and 3. The provision has been modified for purposes of clarity but no substantive amendments have been made.

6 MCAR § 4.9251

6 MCAR § 4.9251 is identical to 40 C.F.R. § 263.10(c). It requires a transporter to comply with 6 MCAR §§ 4.9200-4.9222, Standards Applicable to Generators of Hazardous Waste, if the transporter imports hazardous waste into Minnesota from a foreign country or mixes hazardous waste of different U.S. DOT shipping descriptions into a single container, thereby creating a new hazardous waste with different chemical properties. Since the transporter has taken on the function of a generator when he does this, it is reasonable to require him to comply with the generator standards.

6 MCAR § 4.9252

6 MCAR § 4.9252 is renumbered existing rule 6 MCAR § 4.9005 G. No substantive changes have been made in this rule.

6 MCAR § 4.9253

6 MCAR § 4.9253 is identical to 40 C.F.R. § 263.12. It exempts transporters from complying with facility standards and hazardous waste facility permit procedures for storage if the manifested shipments remain at the transfer facility for ten days or less. For purposes of uniformity it is reasonable to adopt the federal regulation.

6 MCAR § 4.9254 replaces existing rule 6 MCAR § 4.9005 B. and C. and addresses the transportation of hazardous waste. Existing rule 6 MCAR § 4.9005 addressed several specific aspects of transportation. The 1983 Minnesota Legislature adopted by reference the U.S. DOT regulations on the transportation of hazardous materials. 1983 Minn. Laws Ch. 371 § 22 to be codified as Minn. Stat. § 221.033. The U.S. DOT regulations provide a comprehensive set of requirements covering all aspects of hazardous materials transportation. The Agency received comments from MN DOT that by including only a portion of the applicable U.S. DOT provisions some people might believe that only these included provisions applied. Since all the U.S. DOT provisions are applicable, the Agency believes it is preferable to drop the specific provisions from the hazardous waste rules and instead incorporate the MNDOT and U.S. DOT provisions.

Rule 6 MCAR § 4.9005 D.2. has been deleted because this problem is covered by new provisions added elsewhere in these rules. See e.g. 6 MCAR § 4.9257 B. Rule 6 MCAR § 4.9005 E. has



been replaced by proposed rule 6 MCAR § 4.9259 which covers the same subject. It is therefore reasonable to delete these unnecessary provisions.

6 MCAR § 4.9255

6 MCAR § 4.9255 incorporates provisions from existing rule 6 MCAR § 4.9008 and from 40 C.F.R. § 263.20. This rule provides general requirements on the use of a manifest by a transporter. The general provisions require that the transporter sign and date the manifest and give the generator a copy which acknowledges acceptance of the shipment as required by 40 C.F.R. § 263.20(b) and existing rule 6 MCAR § 4.9008 E.1. The transporter is also required under this rule to ensure that the manifest accompanies the hazardous waste shipment in an accessible location. The transporter may not accept a shipment of hazardous waste from a generator unless it is accompanied by a manifest signed by the generator. This is required in 40 C.F.R. § 263.20(a) and existing rule 6 MCAR § 4.9008 B. and E.1.

If a transporter consolidates or commingles shipments of hazardous waste, the driver should be aware of the potential hazards this activity creates, such as fires and explosion. As a result, existing rule 6 MCAR § 4.9008 D. was retained and requires the transporter to prepare a supplemental cover sheet to the manifest which provides the driver and emergency response personnel with procedures for spills and other emergencies.

6 MCAR § 4.9256

6 MCAR § 4.9256 describes the activities transporters must follow in the handling of the manifest. The chronology of activities are designed to the specific modes of transportation in order to avoid upsetting normal methods of operation. The proposed rule is identical to 40 C.F.R. § 263.20(d), (e), (f), and (g). Paragraph A. corresponds to existing rule 6 MCAR § 4.9008 E.1. and E.2. The Agency has adopted the federal language because the EPA regulation is better designed to account for differences in the methods of transportation than the existing state rule and accomplishes the same result while not upsetting or confusing normal methods of operation.

6 MCAR § 4.9257

6 MCAR § 4.9257 incorporates the provisions of 40 C.F.R. § 263.21 with existing rule 6 MCAR § 4.9005 D.2. It is reasonable to include a provision which tells the transporter what to do if the facility refuses to accept the shipment. The Agency has adopted the EPA regulation as a result of several comments received from representatives of industry and experience gained while working with the existing state program.

The existing state rule requires the transporter to return the waste to the generator if not accepted within 48 hours after

delivery. It is not infrequent for a minor discrepancy to exist between the shipment which is being delivered and the information on the manifest. As a result, the facility may take samples of the waste for testing to ensure that they can properly treat or dispose of the material. If the waste is significantly different from that which is listed on the manifest, the generator and facility may have to develop a new contract. These activities may require a period exceeding 48 hours. Since most of Minnesota's hazardous waste is shipped out-of-state, the transportation distances are significant and if the waste must be returned, it is once again subject to the chances of a spill or accident during transit. The EPA regulation would allow the generator and facility owner or operator to come to a satisfactory agreement whereby the facility owner or operator would sign the manifest and accept the waste.

If an unmanifested shipment were to arrive at a permitted facility, the Agency believes it is better for the facility to accept the waste and notify the generator of such a shipment than to reject the shipment. The acceptance of the shipment by the facility operator would allow the generator an opportunity to determine an adequate method of disposal and avoid unnecessary transportation. For these reasons it is reasonable to adopt 40 C.F.R. § 263.21(b) and repeal 6 MCAR § 4.9005 D.2.

6 MCAR § 4.9258

6 MCAR § 4.9258 is identical to 40 C.F.R. § 263.22. Existing rule 6 MCAR § 4.9008 E.4. requires that transporters retain copies of the manifest for a five-year period while the federal rule requires only a three-year retention period. At the public meetings the Agency received comments that records kept pursuant to the Agency's five-year retention requirement were the only records of this type which had to be retained beyond three years and that this created records management problems. Rules affecting transportation of hazardous waste impact interstate commerce. The Agency is adopting the EPA requirement that records must be kept for the duration of an enforcement proceeding. This will ensure that the Agency has the access to records after three years in such cases. Therefore, it is reasonable to change the current five-year retention period to the federal three-year period for purposes of consistency.

6 MCAR § 4.9259

6 MCAR § 4.9259 incorporates the provisions of existing rules 6 MCAR §§ 4.9005 E. and 4.9010 with the provisions of 40 C.F.R. § 263.30. This rule sets forth the actions to be taken in the event of an accidental discharge of hazardous waste during transportation.

Paragraph A. is renumbered rule 6 MCAR § 4.9005 E.5. with only minor changes in language taken from 40 C.F.R. § 263.30(a). These changes require the transporter to take immediate action to protect human health and the environment if a spill occurs during transit. This may be reasonably accomplished by notifying local authorities and diking around the discharge to prevent the waste from spreading into other areas. There is no other substantive change in this rule.

Paragraph B. is identical to 40 C.F.R. § 263.30(b). This paragraph provides federal, state, and local authorities responsible for emergency responses with the ability to authorize the removal of a spilled hazardous waste by a transporter who does not have an EPA identification number or manifest. This provision is reasonable since it allows a spill which threatens human health or the environment to be cleaned up as rapidly as possible without the administrative delays which might occur while a manifest is prepared and a transporter with an identification number found.

Paragraph C. incorporates the provisions of 40 C.F.R. § 263.30(c) and 6 MCAR §§ 4.9010 A. and 4.9005 E.3. Subparagraphs C.2. and C.4. are reasonable since they are required by federal regulations. Subparagraph C.1. is reasonable since it requires the transporter to notify the Agency's spill response unit which

can then determine whether the spill requires Agency personnel for supervision of clean-up operations. Subparagraph C.3. is merely renumbered rule 6 MCAR § 4.9005 E.3. without any substantive modification.

Paragraph D. is renumbered existing rule 6 MCAR § 4.9010 B. This provision, which requires the transporter to clean up the spilled waste and any contaminated materials which resulted from the spill in order to protect human health and the environment, contains no substantive change from the existing rule.

Paragraph E. is taken from 40 C.F.R. § 263.30(c) and (d). Subparagraph E.3. is existing rule 6 MCAR § 4.9005 E.2. This provision requires the transporter to provide a copy of the incident report to the Agency within 15 days of the incident. This will allow the Agency to have a record of the spill and provide the Agency with information needed for monitoring the spill site after the incident, if necessary. The transporter is also required to note on, or attach to, the manifest information on the amount spilled, the location of the site, and the agency (or agencies) responsible for overseeing clean-up operations. This is required in existing rule 6 MCAR § 4.9005 E.2. The existing rule has been modified to delete the requirement that the transporter include information regarding the amount of waste recovered and the place of its disposition. It is reasonable to delete the requirement that the transporter provide this

information because a transporter may not know the information since he may leave the scene once an emergency response unit arrives.

Paragraph F. is renumbered existing rule 6 MCAR § 4.9005 F. The provision has been modified to clarify that hazardous waste may be taken to those facilities which accept hazardous waste but are specifically exempt from obtaining a hazardous waste facility permit. There is no substantive change in this provision.

6 MCAR § 4.9005 G. and H.

Rule 6 MCAR § 4.9005 G. has been renumbered as 6 MCAR § 4.9252. Rule 6 MCAR § 4.9005 H. has been deleted. Crankcase oil is exempt from regulation pursuant to proposed rule 6 MCAR § 4.9128 and since this rule is no longer necessary it is reasonable to delete rule 6 MCAR § 4.9005 H.

F. Chapter Five: Facility Standards, 6 MCAR §§ 4.9280 - 4.9322

Chapter Five contains the requirements for the design and operation of new hazardous waste facilities and existing facilities applying for a permit. The chapter is divided into two types of rules. Rules 6 MCAR §§ 4.9280 through 4.9314 are general standards applying to all treatment, storage, and disposal facilities. These rules include requirements on safety plans, personnel training, records, ground water protection, closure and

post-closure care and financial assurance for corrective action, closure and post-closure care. Rules 6 MCAR §§ 4.9315 through 4.9322 establish specific standards for containers, tanks, surface impoundments, waste piles, landfills, land treatment facilities and thermal treatment facilities. The rules in Chapter Five replace existing rule 6 MCAR § 4.9004.

The proposed rules governing facility standards are based on EPA's standards for owners and operators of hazardous waste treatment, storage and disposal facilities which are set forth in 40 C.F.R. Part 264. With respect to facilities other than land disposal facilities 5/, EPA initially utilized the best engineering judgment approach to hazardous waste permitting. Essentially the best engineering judgment approach relies on basic performance standards and a set of relevant technical factors that relate to those performance standards. When EPA originally proposed its facility standards, EPA relied primarily on facility design and operation standards in an effort to provide specific requirements which could be easily understood and interpreted by permit applicants and permit writers alike, and which could be easily enforced. EPA also attempted to incorporate some flexibility into these standards in an effort to not discourage new technology and to recognize that different design and

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5/ Land disposal facilities include waste piles, surface impoundments, landfills and land treatment units.



operation requirements might be necessary for certain locations and some types of wastes. Based on public comments received following publication of its proposed regulations, EPA revised its approach to allow greater flexibility by expanding the use of operation performance standards. The EPA regulations however still meet EPA's goal of understandable and enforceable regulations.

EPA originally proposed technical standards for permitting land disposal facilities which set uniform design requirements subject to opportunities for variances when alternative designs could achieve equivalent environmental protection. See 43 F.R. 58982 - 58991 (December 18, 1978). Based on comments criticizing this proposal as not sufficiently flexible, EPA repropoed technical standards for permitting land disposal facilities which adopted a site-specific risk-assessment approach. See 46 F.R. 11126 - 11151 (February 5, 1981). This approach would have required the evaluation of the potential risks to human health and the environment posed by a particular facility's location, design, construction and operation. In addition to Federal Register notices on this subject, EPA held numerous public hearings, meetings and symposia to assist it to develop appropriate land disposal standards. The various proposals and meetings addressed many different options for regulating land disposal of hazardous waste.

The rules governing land disposal set forth in Chapter Five are based on the regulations published by EPA on July 26, 1982 at

47 F.R. 32274 - 32369. These rules consist primarily of two groups of performance standards. One set consists of design and operating standards separately tailored for each of the four types of land disposal facilities. The other group establishes a single set of ground water monitoring and response requirements applicable to each of these units.

Because of the detailed work done by EPA in developing its regulations and the need to develop state rules which are at least as stringent as the EPA regulations, the Agency decided to incorporate whenever possible the language and concepts of the EPA regulations into the state rules. The Agency believes that in most instances it is reasonable to rely on EPA's expertise and extensive research in this area. As stated above the Agency has adopted, with certain modifications which will be discussed infra., EPA's regulations governing facility standards. Since we are adopting EPA's regulations the Agency is relying on the extensive background documents prepared by EPA as support for these rules. A complete discussion of the EPA approach is set forth at 45 F.R. 33154 - 33285 (May 19, 1980), 46 F.R. 2802 - 2897 (January 12, 1981) and 47 F.R. 32274 - 32369 (July 26, 1982) and in the background documents for facility standards. The EPA background documents supporting the provisions contained in 40 C.F.R. Part 264 are listed in Part VIII.

6 MCAR § 4.9280

6 MCAR § 4.9280 contains information on the general applicability of these rules. This rule explains who is subject to the provisions of Chapter Five and the circumstances under which a person or facility is excluded from coverage or subject to only limited provisions of these rules. This rule also explains the relationship between the interim status standards contained in Chapter Six and the final facility standards contained in this chapter. It is reasonable to provide this information and to place this rule at the beginning of Chapter Five so that facility owners or operators will know if they are required to meet the standards contained in Chapter Five before proceeding into the remaining text of the chapter. The wording for this rule was taken almost entirely from 40 C.F.R. §§ 264.1 and 264.3.

Paragraph A. states the general applicability of the rules in Chapter Five, which is to all owners and operators of facilities that treat, store, or dispose of hazardous waste (hereinafter "TSDF's") except as otherwise specifically provided. This paragraph further states that the requirements of Chapter Five apply to publicly owned treatment works (hereinafter "POTW's") and to persons disposing of hazardous waste by means of ocean disposal 6/

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6/ Even though there is no ocean bordering Minnesota, the provisions of these rules relating to ocean disposal are federal requirements and must be included for the agency to receive EPA authorization.

only to the extent that they are included in a permit-by-rule granted under the Agency's permitting procedures. Both ocean disposal and POTW's are extensively regulated and subject to permitting under other state or federal programs. Compliance with permits issued pursuant to the federal Marine Protection, Research and Sanctuaries Act or the National Pollutant Discharge Elimination System (hereinafter "NPDES") provides the necessary human health and environmental protection. Therefore it is reasonable to limit the applicability of the Chapter Five rules to these facilities to avoid duplicative regulation. The federal provision requiring underground injection systems to meet the facility standards has not been included since state law has banned the construction of such systems in Minnesota.

Paragraph B. puts owners and operators of TSDF's on notice that they must comply with the Chapter Six rules, rather than the Chapter Five rules, if they have qualified for interim status and final administrative disposition of their permit application has not been made.

Paragraph C. exempts certain persons and TSDF's from the requirements of Chapter Five. Several of these exemptions (subparagraphs C.1., C.2, C.3., C.8., and C.10.) are restatements of exemptions set forth in Chapters Two, Three and Four and are included to avoid confusion. The facilities which are exempted pursuant to subparagraphs C.4., C.5. and C.7. are subject to the

permit-by-rule provisions of Chapter Seven. The basis for the exemption for POTW's set forth in subparagraph C.6. is the same as for the exemption for POTW's contained in paragraph A. The exemption for totally enclosed treatment works, subparagraph C.4., is discussed at 45 F.R. 33176 - 33177 (May 19, 1980). The exemption regarding elementary neutralization and wastewater treatment units, subparagraph C.5., was rewritten to include pretreatment units. However, the exemption applies to facilities which handle only hazardous waste generated by the owner or operator of the unit. This provision was inserted in order to be consistent with Agency policy to track hazardous waste from cradle-to-grave. It is reasonable to retain pretreatment, elementary neutralization, and wastewater treatment units within the regulated community should the facility accept waste from off-site since the potential for mismanagement is increased.

Additionally, an exemption was included in subparagraph C.7. for energy production facilities handling wastes produced in conjunction with the combustion of fossil fuels. The Agency, after reviewing EPA's exemption and the current management techniques for these wastes, decided that these facilities can be adequately regulated through a permit-by-rule. This provision lists the conditions under which a facility may qualify for regulation under a permit-by-rule and Chapter Seven lists the specific facility standards which are applicable to these facilities. This is a reasonable approach in regulating these

facilities since the required provisions will ensure that the basic facility standards needed to protect human health and the environment are applied while reducing expenditures needed to retrofit these facilities to comply with the entirety of Chapter Five.

Subparagraph C.9. exempts persons who add absorbent materials to waste in containers or add waste to drums containing adsorbent material in order to solidify or reduce the free liquid content of their containerized wastes. The exemption is limited to these practices when employed at the time hazardous wastes are first placed in containers. These practices are treatment because they are methods designed to change the physical character of hazardous waste so as to render the waste less hazardous to dispose. Without this exemption persons who employ these practices must have a permit and must comply with the relevant portions of this chapter. This exemption is based on the corresponding exemption in 40 C.F.R. § 264.1 (g)(10) and is discussed at 47 F.R. 8304 - 8306 (February 25, 1982).

6 MCAR § 4.9281

Rule 6 MCAR § 4.9281 contains the general standards applicable to owners and operators of all hazardous waste facilities. This rule includes requirements for facility identification numbers, notices, security and inspections. This

rule was adopted from the EPA hazardous waste regulations, 40 C.F.R. §§ 264.10 - 264.12, 264.14 and 264.15, because current state rules do not cover these areas in the detail needed for authorization. These EPA regulations are discussed at 45 F.R. 33179 - 33186 (May 19, 1980).

Paragraph A. relates to applicability and is self-explanatory. Paragraph B. requires owners and operators of TSDF's to obtain identification numbers. The facility identification number is required for tracking purposes to follow hazardous waste from generation to its final disposition.

Paragraph C. identifies the occasions when the Agency must be notified by the facility owner or operator concerning the delivery of hazardous waste at a facility. Later rules explain in more detail the information required in each notice. Subparagraph C.1. requires the owner or operator to notify EPA and the Agency Director at least four weeks prior to receipt of a shipment of hazardous waste from a foreign source. This requirement is reasonable in view of EPA's responsibility to oversee the transportation and management of hazardous waste imported to the United States. Subparagraph C.2. is taken from existing rule 6 MCAR § 4.9004 C.2.c.

Subparagraph C.3. requires the owner or operator of an off-site TSDF to inform the generator in writing that the facility has the appropriate permit(s) for, and will accept, the generator's waste. Generators are required to send their

hazardous wastes only to a facility with the appropriate permit(s) or interim status. A written certification will assure generators that this requirement is satisfied and also avoid the potential problem of a generator designating a facility which has not agreed to accept the waste. Subparagraph C.4. requires the owner or operator of a TSD facility to notify the new owner or operator of the applicability of the hazardous waste rules before transferring ownership or operation. This requirement is included to minimize the possibility that an unsuspecting buyer may purchase a facility not knowing that this purchase entails having to comply with these rules.

The security requirements set forth in paragraph D. are intended to prevent unauthorized persons or livestock from entering a hazardous waste facility and injuring themselves and/or causing a violation of the requirements of this chapter. Existing rule 6 MCAR § 4.9004 C.l.e. sets forth only a general requirement for controlling access to a facility. To accomplish the intended objective, the proposed rule includes general, but more detailed, performance requirements on signs, means to control access at the gate, a barrier surrounding the active portion of the facility and a 24-hour surveillance system. The proposed rule also establishes the conditions for an exemption if it can be demonstrated that unknowing or unauthorized entry will not result in injury to people, livestock or the environment. Because these conditions are rarely concurrently satisfied, the Agency does not expect



that many sites will be exempt from the security requirements.

Paragraph E. sets forth general inspection requirements for owners and operators of TSDF's. The inspection standards provided in this rule are used as preventative measures to help avert the release of hazardous wastes that would affect public health and the environment due to malfunctions or deterioration of equipment. EPA originally proposed a regulation specifying seven parts or aspects of a facility which owners or operators were required to inspect daily for specific signs of deterioration or malfunction. EPA received many comments on the proposed regulation which indicated that the required inspections were either not applicable to all facility types or would be impossible to implement, that the list could not include all of the possible items which should be inspected, and, that since in many cases the rate of deterioration is very slow, daily inspections are unnecessary. Based on these comments EPA rewrote its regulation to require the owner or operator to develop and follow a facility specific inspection schedule based on the facility's critical processes, equipment, structures, the potential for failure and the rate of any deterioration processes which may lead to failure. However, since all owners and operators are not equally knowledgeable, EPA has retained specific minimum inspection requirements. The rule also requires that a report be made of all inspections. The Agency believes the EPA inspection provisions are reasonable and has therefore incorporated the provisions of 40 C.F.R. § 264.15 into Chapter Five as paragraph E. of 6 MCAR § 4.9281.

6 MCAR § 4.9282

Rule 6 MCAR § 4.9282 sets forth the training requirements for persons involved in the management of hazardous waste. This rule is intended to reduce the potential for mistakes which might threaten human health or the environment by ensuring that facility personnel have the requisite skills and knowledge to perform their tasks in a competent manner. This rule was excerpted from 40 C.F.R. § 264.16 since the state's existing rules did not specifically cover personnel training.

The requirements of this rule are written as general performance standards to allow personnel training programs to be directed towards each specific facility's process or management technique. This is reasonable since, due to the variability in types of facilities, a rule cannot be expected to define a training program that would be appropriate for all types of facilities. The rule as proposed allows for supervised on-the-job training as well as classroom instruction to be included as part of any training program. However, the content, schedule and techniques to be used in the on-the-job training program must be described in the training records maintained at the facility and will be subject to approval during the permitting process.

The objectives of the Agency's hazardous waste rules include the prevention of an environmental or public health hazard due to the mismanagement of hazardous wastes and, therefore, it is

reasonable to provide a mechanism to review for and prevent such occurrences. By requiring the owner or operator of a TSDF to maintain training records, the Agency will be able to evaluate the training received and eliminate areas of potential mismanagement due to insufficient training. Additionally, as training makes employees aware of potential hazards, the Agency anticipates that training will increase the caution with which employees handle hazardous waste.

6 MCAR § 4.9283

Rule 6 MCAR § 4.9283 sets forth the general requirements for handling ignitable, reactive or incompatible wastes and is based on 40 C.F.R. § 264.17 and is discussed at 45 F.R. 33182 - 33183 (May 19, 1980). These general standards are intended to insure that several undesirable results are avoided when ignitable or reactive wastes are handled or incompatible wastes are mixed. Extreme heat or pressure, fires or explosions, violent reactions, and damage to the structural integrity of the device or facility containing the waste are clearly undesirable because of the likelihood that they will cause or lead to injury or death of facility personnel, and the spread of hazardous wastes into the environment. The production of uncontrolled flammable fumes or gases in sufficient quantities to pose the risk of fire or explosion is undesirable for similar reasons. Therefore the rule

prohibits the creation of uncontrolled toxic dusts, mists, fumes and gases in sufficient quantities to threaten human health. Because the possible undesirable results from the mixing or handling of wastes may be enormously varied, the rule prohibits the creation of conditions like those mentioned above which threaten human health and the environment.

Paragraph A. requires TSDF owners or operators to take precautions to prevent accidental ignition or reaction of ignitable or reactive waste. Paragraph B. requires the owner or operator to treat, store or dispose of ignitable, reactive or incompatible waste so that it does not ignite or explode, emit toxic gases, damage the containment structure or through like means threaten human health and the environment. Paragraph C. requires owners and operators to document their compliance with this rule. This documentation can take the form of references to scientific and engineering literature or data derived from experience with similar waste using similar equipment under similar conditions. Requiring documentation will insure that the necessary research work is carried out and make clear how determinations are made.

This Agency has the responsibility to prevent damage to human health or the environment due to the leakage of hazardous waste. Therefore, the Agency believes that the requirements for the separation of wastes which if mixed might endanger facility personnel or cause hazardous waste to be discharged to the air,

land, or waters of the state, are not only reasonable but crucial. During the public meetings held by Agency staff concerns were expressed that the language of the rule could be interpreted as a blanket denial on mixing ignitable, reactive, or incompatible wastes. The public felt the prohibition on mixing incompatible wastes would preclude management techniques presently considered accepted. As a result subparagraph B.1. was reworded to allow the mixing of wastes that generate excess heat, pressure, fire, etc. if the person doing the mixing is capable of handling any reaction which might occur and the process is permitted by the Agency.

6 MCAR § 4.9284

Rule 6 MCAR § 4.9284 sets forth the general requirements a facility owner or operator must meet when analyzing hazardous waste received for treatment, storage, or disposal and is based on 40 C.F.R. § 264.13.

Paragraph A. requires a facility owner or operator to obtain a detailed chemical and physical analysis of a representative sample of the waste before it is treated, stored or disposed and sets forth what must be included in the analysis and when it must be repeated. Paragraph B. requires the owner or operator to develop and follow a written waste analysis plan which describes the procedures which will be used to determine the identity of incoming wastes and also sets forth specific factors which must be included in the plan.

The purpose of the proposed waste analysis standards is to insure that owners or operators possess sufficient information on the properties of the wastes which they manage to be able to treat, store or dispose of the waste in a manner which will not pose a threat to human health or the environment. The requirement that owners and operators develop and maintain a waste analysis plan will allow owners and operators to tailor their waste analysis procedures to the type of wastes and techniques which the facility uses to manage these wastes while also providing the Agency with a review mechanism which will encourage owners or operators to conduct thorough analyses of the wastes which they manage.

6 MCAR § 4.9285

Rule 6 MCAR § 4.9285 sets forth standards governing the location of hazardous waste facilities. The hazard which a TSDF presents to human health and the environment may be increased by locating the facility in certain areas. The location standards are designed to reduce these additional risks. Proposed rule 6 MCAR § 4.9285 incorporates provisions from 40 C.F.R. § 264.18 and existing rule 6 MCAR § 4.9004 B. The federal locational standards are discussed at 47 F.R. 32290 - 32291 (July 26, 1982) and other publications cited therein. The federal provision prohibiting the location of a TSDF within 200 feet of a fault which has had displacement in Holocene time has not been included

since Minnesota does not contain such a fault. See Comment to 40 C.F.R. § 264.18(a) and 40 C.F.R. Part 264, Appendix VI.

Paragraph A. governs the location of TSDF's in a floodplain and is taken from 40 C.F.R. § 264.18(b). The primary concern with respect to facilities located in a floodplain involves waste washing out or being carried in flood waters from the active portion of a facility, thereby exposing surface water, ground water, aquatic life, soils and human health to potential contamination through direct contact with the waste. Existing rule 6 MCAR § 4.9004 B.1. prohibits the location of a TSDF in a 100-year floodplain. 40 C.F.R. § 264.18(b) and proposed rule 6 MCAR § 4.9285 A. allow for the placement of a facility within the 100-year floodplain, but only after the owner or operator has demonstrated that the technologies used at the facility will prevent the washout of hazardous waste or that, in the event of a flood, the waste could and would be removed to a safe area before flood waters reached the facility. Various technologies have been developed to deal with flooding problems. These techniques have been in common use and treatment of hydraulic conditions is within the knowledge of qualified engineers.

The Agency recognizes that some existing facilities were located in 100-year floodplains before existing rule 6 MCAR § 4.9004 B.1. applied to them and consequently the preferred option of not locating in a 100-year floodplain is not available. The option of removing waste to a safe location may not be viable

for many existing facilities. Retrofitting may also not be feasible or practicable because of inadequate landspace or structural capacity to construct new or elevate existing walls or dikes. Therefore EPA promulgated, and the Agency is proposing in subparagraph A.2., an exemption defining narrow circumstances in which such existing facilities may continue to be located in a 100-year floodplain. To qualify for this exemption the owner or operator must demonstrate that a washout would cause no adverse effects on human health or the environment. The factors which must be considered are listed in subparagraph A.2. These factors address the principal adverse health and environmental effects that can potentially result from flood washout such as the contamination of river sediments and floodplain soils caused by sedimentation of washed-out hazardous constituents as and after the floodwaters recede. Therefore, it is reasonable to adopt the EPA regulation permitting TSD's to be located within a floodplain providing the safeguards set forth in the rule are met.

Paragraph B. is renumbered existing rule 6 MCAR § 4.9004 B. However, subparagraph B.1. has been modified to delete floodplains since they are now governed by paragraph A. and subparagraph B.2. has been modified by the addition of the factors which the Agency will consider in determining if the site is unsuitable. It is reasonable to include the factors which the Agency will consider so that the regulated public will know what topographic, geologic and hydrologic features are significant. The factors listed



relate to the presence of surface and ground water at or near the site and the natural ability of the site to protect these resources. Since accidents could result in the leakage of hazardous waste into the environment it is reasonable to limit the construction of hazardous waste facilities to those areas presenting reasonably safe conditions from a geological or hydrological point of view.

6 MCAR § 4.9286

Rule 6 MCAR § 4.9286 contains the general safety requirements for all facilities handling hazardous waste. The provisions of this rule are taken from 40 C.F.R. §§ 264.30 through 264.35. This rule sets forth the safety equipment, such as fire extinguishers and internal communications equipment or alarm systems, which a facility must have, requires periodic testing of the equipment and requires sufficient aisle space and access to communication or alarm systems to allow immediate notification and access in case of an emergency. This rule is reasonable because the standards presented in this rule constitute the design, operation, and equipment requirements needed to minimize the possibility of serious environmental or public health hazards due to fires, explosions, or unplanned releases of hazardous waste.

6 MCAR § 4.9287

Rule 6 MCAR § 4.9287 sets forth requirements on arrangements with local authorities for emergencies. This rule is taken from

40 C.F.R. § 264.37. It is reasonable to require that facility owners or operators meet with the local authorities who might respond to an emergency at the facility because police, fire departments, and emergency response teams need to be aware of the facility layout and the properties of any hazardous waste they might encounter so that proper precautions can be taken against personal injury and proper equipment for responding to the emergency can be included in response vehicles.

6 MCAR § 4.9288

Rule 6 MCAR § 4.9288 requires each hazardous waste management facility to have a contingency plan to minimize the potential hazards from fires, explosions, and other conditions which could lead to the release of hazardous wastes. The contingency plan must describe actions to be taken by facility personnel in response to fires, explosions, or other emergency conditions and must include the name of the facility's emergency coordinator, a list of the facility's emergency equipment, and the description of arrangements made with local agencies or departments which may have to respond to an emergency at the facility. Copies of the plan must be kept at the facility and sent to the agencies that would respond in an emergency.

The provisions of this rule have been taken from 40 C.F.R. §§ 264.50 - 264.54 since the current coverage of this topic under state rules is not as complete as the federal language.

Presently, the state rules have contingency provisions divided among three rules. This rule has collected these provisions in a central location for clarification and ease of use. The requirement of a contingency plan for all facilities is reasonable since the development of such plans will minimize hazards to human health and the environment in the event of fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste to air, soil or surface water by increasing facility personnel's awareness of the types of emergencies which might occur at the facility and minimizing response times to such occurrences because proper response procedures have been clearly delineated.

6 MCAR § 4.9289

Rule 6 MCAR § 4.9289 outlines the procedures to be followed during an emergency, requires each facility to have an emergency coordinator, and identifies the basic functions expected of the coordinator during any emergency. These duties include notification of appropriate state and local authorities and assessing the possible hazards that might result from the release of wastes at the facility. This rule is taken from 40 C.F.R. §§ 264.55 and 264.56. It is reasonable to require each facility to have one person in charge during an emergency with the responsibility and authority to direct response measures. This will assure that proper and timely actions will be taken in an

emergency, thereby minimizing the hazards which might occur during such situations. It is also reasonable to set forth the procedures to be followed so that all necessary steps will be taken to insure that the harm to persons and the environment is minimized as much as possible.

6 MCAR § 4.9290

Rule 6 MCAR § 4.9290 sets forth the proper procedures to be followed after an emergency for decontamination of equipment, and disposal of contaminated soil or water and recovered waste. This rule is taken from 40 C.F.R. § 264.56. The rule provides that all recovered materials must be treated as a hazardous waste unless it can be demonstrated that the material is not hazardous. The Agency believes that, given the nature of hazardous wastes handled at a facility, it is reasonable to assume that residual materials from an emergency should be considered a hazardous waste unless proven otherwise and should, therefore, meet the applicable rules for their disposal. It is also reasonable to require that the Agency be notified when cleanup procedures have been completed so that the Agency is aware of the conditions at the facility.

6 MCAR § 4.9291

Rule 6 MCAR § 4.9291 requires hazardous waste facilities initiating a shipment of hazardous waste from their facility to meet the generator requirements of 6 MCAR §§ 4.9200 - 4.9222. This

rule is taken from 40 C.F.R § 264.71(c). Since the owner or operator of the facility by initiating the shipment of a hazardous waste is performing a function usually performed by the generator, it is reasonable to consider the facility owner or operator as a generator and thus require compliance with all applicable requirements.

6 MCAR § 4.9292

Rule 6 MCAR § 4.9292 contains the requirements for both on-site and off-site facilities regarding the manifests accompanying a shipment of hazardous waste. The manifest is used to track hazardous waste from its origin with the generator, through its trip with the transporter, to its disposition at the designated facility for treatment, storage or disposal. This rule is taken from 40 C.F.R. § 264.71 and specifies that the facility owner or operator must sign, date, and return a copy of the manifest to the generator and the Agency within 10 days after delivery. Owners and operators must also note any discrepancies in the type or quantity of waste received. These requirements form the last steps in the information loop initiated in the manifest requirement for generators. Requiring the return of the manifest to the generator provides assurance that the waste has, in fact, arrived at the designated facility. Requiring that a copy be sent to the Agency is also reasonable since it will close the

information loop and will minimize the possibility for illegal or improper disposal of wastes and thereby protect human health and the environment.

Existing rule 6 MCAR § 4.9008 E.1. requires the facility operator to return a copy of the manifest to the generator and the Director within five working days after obtaining possession. 40 C.F.R. § 264.71 specifies that a copy of the manifest be returned to the generator within 30 days of delivery. The Agency believes that it is important to be notified as soon as possible that a waste shipment has reached its intended destination. Therefore, the Agency determined not to increase the time for returning manifests from the current five working days to 30 days. However, based on comments that some additional time would be helpful, the Agency has determined increase the time period from five working days to ten days.

6 MCAR § 4.9293

Rule 6 MCAR § 4.9293 sets forth the procedures facility owners or operators must follow concerning manifest discrepancies. Discrepancies are divided into two types, significant and minor, with different procedures required depending on the type of discrepancy. This rule also provides the mechanism for resolving discrepancies prior to notifying the Agency. The language for this rule was taken from 40 C.F.R. § 264.72 for significant

discrepancies and from existing rule 6 MCAR § 4.9004 C.2. for minor discrepancies.

It is important that the waste received at a facility be the type named on the manifest to ensure proper management of the waste. Mislabeling containers or shipping inappropriate wastes may result in damage to facility equipment or personnel and leakage of hazardous wastes to the environment. Discrepancies may also indicate that "midnight dumping" or a spill has occurred. Discrepancy reporting will help ensure that the regulated community complies with the hazardous waste rules by providing the Agency with information needed to monitor the accuracy of manifests. The proposed discrepancy reporting system does not cause an unnecessary burden for the facility owner or operator since only unresolved significant discrepancies are reported to the Agency. All other discrepancies and their resolution are noted on the manifest.

6 MCAR § 4.9294

Rule 6 MCAR § 4.9294 requires that all facility owners and operators to maintain an operating record and specifies the information to be included in the record. The information required in the operating record was taken from 40 C.F.R. § 264.73 and does not include any information which is not needed to properly manage the incoming hazardous waste. Adequate

recordkeeping is an integral part of facility operations and is needed to ensure prompt, proper and effective responses to emergency situations by providing facility owners and operators, and local authorities with information which allows them to accurately assess any hazard posed to human health and the environment and to respond accordingly. This recordkeeping activity will also help to ensure the proper closure of a facility as well as helping to ensure that the regulated community complies with the hazardous waste rules by providing the Agency with sufficient information to monitor facility operations.

6 MCAR § 4.9295

Rule 6 MCAR § 4.9295 contains the requirements applicable to both on-site and off-site facilities for the retention and disposition of records and is taken from 40 C.F.R. § 264.74(b) and (c). This rule is reasonable because the information contained in the records maintained at a facility (operating, personnel training, etc.) are needed for the Agency to adequately assess the facility's operating procedures and determine whether any mismanagement may have occurred. This rule also requires the owner or operator to send a copy of the records indicating waste disposal locations and quantities to the Agency and the local land authority upon closure of the facility. This provision is reasonable to ensure that future uses of the land will be



compatible with the waste which was disposed and the disposal methods used.

6 MCAR § 4.9296

6 MCAR § 4.9296 requires the facility owner or operator to submit an annual report and an unmanifested waste reports to the Agency and lists the information to be contained in each report. The rule also requires the facility owner or operator to report to the Director as required by other provisions of Chapter 5. Except for the requirement on filing an annual report, the provisions in this rule are taken from 40 C.F.R. §§ 264.76 and 264.77. The information requirements for the annual report are taken from 40 C.F.R. § 264.75.

This rule is reasonable because the Agency is responsible for tracking hazardous waste within the State of Minnesota and, therefore, needs specific information on what happens to the waste at each facility in addition to knowing that it was properly transported to the facility. The Agency uses a computer tracking system to match manifests received from a facility against the reports submitted for quantity and types of waste received at the facility. The information obtained from these reports and the tracking system will also be used to monitor generators who routinely fail to properly manifest their hazardous waste and facilities who routinely accept wastes that are not

manifested or listed in their permit. These types of occurrences could result in improper management of hazardous wastes which could potentially harm human health and the environment.

EPA originally required facility owners and operators to submit annual reports. See 45 F.R. 33189 - 33190 (May 19, 1980). However, following an evaluation of its information needs, in response to public comments and in an attempt to reduce the paper-work burden, EPA changed this requirement to a biennial report. See 48 F.R. 3978 - 3981 (January 28, 1983). The Agency has decided, based on a review of its information needs, to retain the annual report requirement. Annual reports provide the Agency with more up-to-date information which is needed to verify facility compliance with the terms of its permit. In addition, the information regarding hazardous wastes will be used to ensure ground water monitoring systems have been established for the correct parameters and provide adequate protection against the contamination of ground water.

6 MCAR § 4.9297

Proposed rule 6 MCAR § 4.9297 establishes ground water monitoring and response requirements for facilities which treat, store or dispose of hazardous waste in surface impoundments, waste piles, land treatment units or landfills. These ground water protection requirements establish a three-stage program to detect, evaluate, and, if necessary, correct ground water contamination

during the active life, including the closure period, of a unit plus a compliance period established in the permit. The proposed rule is based on the ground water monitoring and response requirements found at 40 C.F.R. Part 264, Subpart F. However, as discussed in more detail below, the Agency does not believe that EPA's requirements are sufficiently stringent in all areas. Therefore 6 MCAR § 4.9297 does not incorporate the provisions of Subpart F verbatim. The EPA regulations are discussed at 47 F.R. 32283 - 32288 and 32291 - 32312 (July 26, 1982) and in the background documents on ground water monitoring listed in Part VIII. and, except for those portions which are not applicable, the Agency is relying on those documents as support for this rule.

Paragraph A. provides information on the applicability of 6 MCAR § 4.9297 and is based on 40 C.F.R. § 264.90. This paragraph provides that the rule is applicable to new and existing surface impoundments, land treatment units, waste piles and landfills that manage hazardous waste. This paragraph also incorporates three exemptions. First, the general exemptions in 6 MCAR § 4.9280 apply to the requirements of this rule as well. Second, waste piles which are totally enclosed or which are underlain by a liner which may be periodically inspected are exempted. This exclusion is based on the ability to detect when the liner has failed and on the premise that because of the facility's construction, operation or waste type the possibility of leachate

generation has been reduced to such a degree that ground-water contamination is unlikely. Third, land treatment units may be exempted from monitoring during the post-closure care period if the owner or operator can demonstrate that the hazardous constituents in the waste have been effectively treated.

Paragraph A. also allows the Agency to impose any or all of the conditions of 6 MCAR § 4.9297 on the owner or operator of a facility that treats or stores hazardous waste in tanks or containers. This provision is not included in 40 C.F.R. § 264.90. It has been added because in some geologic settings in Minnesota ground water could be seriously affected if wastes from these facilities were released. Also, ground water monitoring may be needed to supplement the engineering standards required for tanks and containers.

Two exemptions provided by 40 C.F.R. § 264.90 have not been incorporated into this rule. First, EPA exempts double-lined surface impoundments, waste piles and landfills. The reason given by EPA for the exemption is that the double liner involves an ongoing method for detecting whether the unit's liner has failed. The Agency does not agree with EPA's assessment of the absolute ability of a double-lined facility to prevent hazardous constituents from entering the ground water. Ground water is a precious resource. The purpose of the ground water monitoring requirements is to detect any release of hazardous constituents as early as

possible so that corrective action can be taken. Therefore, the Agency does not believe it is reasonable to exclude facilities from the requirements of the rule merely because they have double liners. Second, EPA exempts facilities from the requirements of this rule if it can be demonstrated that there is no potential for the migration of liquid from the facility to the uppermost aquifer. This exclusion was designed for facilities located in hydrogeologic settings that would prevent leachate migration to ground water for very long periods. It is not reasonable to include this exemption because the climatic and geologic conditions in Minnesota would preclude the necessary finding.

Paragraph A. also establishes the duration of the requirements of 6 MCAR § 4.9297. The requirements apply to all covered facilities during their active life, including the closure period. Following closure, the requirements apply during the post-closure care period if the owner or operator is conducting a detection monitoring program and during the compliance period if the owner or operator is conducting a compliance monitoring or corrective action program. When the compliance period ends before the end of the post-closure care period, the detection monitoring program must be reinstated for the remainder of the post-closure care period under the permit. It is reasonable to require the facility owner or operator to take all reasonable steps to assure ground water protection. The completion of a corrective action or a compliance monitoring program does not mean

that significant contamination will never appear below a facility. Since hazardous constituents move at different speeds through soils and may be released at different times, contamination could appear several years after a facility has closed or after an initial plume of contamination had been detected and cleaned up. Requiring a detection monitoring program throughout the post closure care period is necessary to determine whether such delayed contamination appears. The owners or operators of facilities from which all waste and contaminated materials are removed at closure may discontinue monitoring after closure. Since the source of potential ground water contamination has been removed, there is no reason to require continued ground water monitoring if no contamination has occurred up to that time.

6 MCAR § 4.9297 B. provides the relationship between the presence and location of hazardous constituents in the ground water and the level of response which is required. At a minimum all covered facilities must have a detection monitoring program. This is to ensure that any leakage from the facility is detected. When a statistically significant increase of hazardous constituents is detected, the level of ground water monitoring is increased from detection to compliance monitoring. The compliance monitoring program better defines the magnitude and extent of the possible ground water contamination and also provides a means for determining if the ground water protection standard is exceeded.

If this standard is exceeded, then a corrective action program must be implemented.

Subparagraphs B.2. - B.4. provide that permits for regulated facilities must include a detection monitoring program, a compliance monitoring program, and a corrective action plan. This differs from the provisions of 40 C.F.R. § 264.91(b) which requires the establishment of only one program (i.e. a detection monitoring program) in the permit and does not require a compliance monitoring plan or corrective action plan until contamination is detected.

The Agency reviewed EPA's rationale for requiring only one program in the permit and have concluded that not including the specifics of all three programs created the potential for serious environmental harm. Inclusion of the compliance monitoring program and the corrective action plan in the permit avoids the delays inherent in developing such a program and amending the facility permit to include it after contamination has been determined. A corrective action plan addresses the measures which are necessary to meet the requirements of 6 MCAR § 4.9297 M.2., M.4. and M.5. to remove or treat in place the hazardous constituents which exceed their concentration limits. The corrective action plan must address the ground water monitoring which is necessary to demonstrate the effectiveness of the corrective action program. As part of the corrective action plan, estimates of the time and costs necessary to implement the plan

must be provided. It is reasonable to require these figures because they are necessary in order to arrive at a cost for corrective action. This cost will be used in establishing the amount of financial assurance which the owner or operator must provide in order to ensure that he has access to sufficient financial resources to initiate and complete the corrective action program. Inclusion of the corrective action plan in the permit also allows both the Agency and the owner and operator to ensure that corrective action is feasible prior to permitting.

Paragraph C., which is based on 40 C.F.R. § 264.93 and is discussed at 47 F.R. 32295 (July 26, 1982), describes the ground water protection standard which is established as part of the permit. This standard is based on the data collected pursuant to 6 MCAR § 4.9297 J. and K. and provides a predetermined performance standard for the facility. The performance standard is designed to ensure that hazardous constituents entering the ground water from a regulated unit do not exceed the concentration limits in the ground water at and beyond the point of compliance during the compliance period.

Paragraph D. is based on 40 C.F.R. § 264.93 (a) and requires the Agency to specify in the facility permit the hazardous constituents to which the ground water protection standard applies. Hazardous constituents which the Agency may specify are either those constituents listed in 6 MCAR § 4.9137 or are constituents contained in wastes that meet criteria established in 6 MCAR § 4.9132 F. for toxicity and which may reasonably be expected to contribute to the toxicity. The inclusion of



constituents of wastes which have a toxic characteristic is not contained in the federal regulations. This provision is necessary because toxicity is a characteristic of a waste which can make it hazardous under Minnesota's rules but not under those of the EPA. It is possible that a waste may have toxic characteristics but is not be listed in 6 MCAR § 4.9137, so it is reasonable to include all potentially hazardous constituents in the rule.

Paragraph E. is based on 40 C.F.R. § 264.93(b) and provides the Agency with a mechanism for excluding constituents from the list of hazardous constituents specified in the facility permit if it can be shown that the constituent is not capable of posing a substantial present or potential hazard to human health or the environment. By allowing this exclusion, constituents which can be proven to be non-harmful at the concentrations that the facility may produce can be excluded by the Agency, while constituents which do pose a substantial threat to human health or the environment will be included in the facility permit. In order to provide a basis for the Agency's determination, Paragraph E. lists the factors relating to possible effects on ground water and surface water which must be considered. The rationale utilized by EPA when adopting 40 C.F.R. § 264.93 is set forth at 47 F.R. 32295 - 32297 (July 26, 1982).

Paragraph F. is based on 40 C.F.R. § 264.94(a) and sets forth the criteria that the Agency will use to establish concentration limits for hazardous constituents in the facility permit. For

most constituents the concentration limit is the background level of that constituent in ground water when the limit is established. This is a conservative approach which is consistent with current Agency rules, specifically 6 MCAR § 4.8022. The use of non-degradation standards for constituents for which little information on environmental risk exists is reasonable because it avoids potential problems which could occur if poorly documented numerical criteria are specified. However, paragraph F. also requires that for constituents for which the EPA has established national interim primary drinking water standards, these standards should be the concentration limits; provided that the background levels of the constituents are below their primary drinking water standards as set forth in exhibit 6 MCAR § 4.9297 F.2.-1.

The Agency received comments suggesting that the background level of a constituent in ground water should be the concentration limit for all hazardous constituents, including the fourteen hazardous constituents for which primary drinking water standards have been established. The use of the primary drinking water standards as ground water concentration limits is reasonable because these standards are well documented and have been established to ensure that human health is protected. The basis for EPA's use of drinking water standards is discussed in the background documents listed in Part VIII.

The use of primary drinking water standards as concentration limits does not preclude ground water being cleaned up beyond these standards during corrective action. In the event that ground water became contaminated, it is unlikely that a statistically significant increase would occur only for hazardous constituents for which primary drinking water standards have been established. Corrective action would include either treatment or removal of the contaminated groundwater. In the course of corrective action to reduce the concentration of hazardous constituents to background levels the concentration of hazardous constituents which have primary drinking water standards likely would also be reduced.

Paragraph G. is taken from 40 C.F.R. § 264.94(b) and provides that the Agency will establish an alternate concentration limit if it finds that the constituent will not pose a substantial present or potential hazard to human health or the environment as long as the alternate concentration limit is not exceeded. This is the same standard which the Agency uses when considering whether to exclude a hazardous constituent from the facility permit. As does paragraph E., paragraph G. lists the factors relating to ground water and surface water which the Agency must use when establishing an alternate concentration limit. The rationale utilized by EPA when adopting 40 C.F.R. § 264.94 is discussed at 47 F.R. 32297 - 32299 (July 26, 1982).

Paragraph H. is based on 40 C.F.R. § 264.95 and is discussed at 47 F.R. 32299 (July 26, 1982). This paragraph establishes the point of compliance at which the ground water protection standard of paragraph C. must be met. The point of compliance is a vertical surface located at the hydraulically downgradient limit of the waste management area that extends to the bottom of potentially affected ground water underlying the regulated units. The waste management area is the limit projected in the horizontal plane of the area on which waste will be placed during the active life of the regulated unit. The waste management area includes horizontal space taken up by any liner, dike, or other barrier designed to contain waste in a regulated unit. This designation of the point of compliance allows monitoring to occur close to the wastes yet it maintains the integrity of containment structures which could be adversely affected by the installation of monitoring devices. Locating the point of compliance at the edge of the waste management area ensures that corrective action can be taken soon after contamination occurs and will be more easily and economically accomplished as the area of contamination should still be relatively small.

Paragraph H. provides that the Agency may establish a single point of compliance for facilities with more than one regulated unit if the owner or operator demonstrates that ground water contamination will be detected from all units in a timely manner. In all other cases, the Agency shall establish a point of

compliance for each unit. This part of the rule differs somewhat from the corresponding federal regulation. 40 C.F.R. § 264.95 allows one compliance point for all multi-unit facilities instead of allowing one compliance point only under certain conditions as established in the Agency's proposed rule. If several separate units in a single facility have a single point of compliance prior to detection, contamination of large areas of ground water could occur. Additional time could be lost in attempting to determine which unit was leaking. Under this approach the Agency has the flexibility to require only a single point of compliance for units which are adjacent to, or close to, one another and for which multiple monitoring systems would be redundant. This approach avoids the problem caused by a multi-unit facility contaminating significant amounts of ground water prior to detection of contamination by a single ground water monitoring system around the perimeter of the facility.

Paragraph I. is based on 40 C.F.R. § 264.96 and establishes the duration of the compliance period. The compliance period is the number of years equal to the active life of the waste management area, including any waste management activity prior to permitting, and the closure period. The rationale behind a compliance period equal to the active life of a waste management area is discussed at 47 F.R. 32299 - 32300 (July 26, 1982).

This definition of the compliance period is based on a simplified model of leachate generation which assumes that the

earliest statistically significant increase in a monitoring parameter or hazardous constituent represents the leading edge of a plume. Furthermore, the duration of the plume should be roughly equal to the facility's active life which is the period of time during which the waste is exposed to precipitation. Thus, the compliance period is designed to approximately equal the life of a plume. However, if the owner or operator is engaged in a corrective action program at the time the compliance period ends, the compliance period is extended until the owner or operator can demonstrate that the ground water protection standard of paragraph C. has not been exceeded for a period of five consecutive years. It is reasonable to require that the compliance period be extended until corrective action is complete as this ensures that the ground water quality will be restored and that an adequate monitoring system will exist to document compliance with the ground water standard. Five consecutive years of not exceeding the ground water protection standard are required before the compliance period is terminated. This is in contrast to the period of three consecutive years which EPA has adopted to "provide a reasonable margin of safety in determining whether a plume of contamination has been removed." The use of five years in lieu of three years increases this "margin of safety" and is still within a range which is reasonable.

Paragraph J. describes the general ground water monitoring

requirements for facilities and is based on the provisions of 40 C.F.R. § 264.97. The rationale for the EPA regulations is set forth at 47 F.R. 32300 - 32304 (July 26, 1982). Subparagraph J.1. describes the ground water monitoring system itself. It requires that the ground water monitoring system be capable of providing data on the background quality of ground water and be likely to detect contamination from the regulated unit. Subparagraph J.2. provides that a facility with more than one regulated unit may have a single ground water monitoring system if the owner or operator demonstrates that the system allows for timely detection of ground water contamination. This would be the case if the facility had a single point of compliance. This subparagraph differs from the corresponding provision of 40 C.F.R. § 264.97 which requires only a single ground water monitoring system at multiple unit facilities. As discussed with respect to paragraph H. above, where regulated units are separate, large volumes of ground water potentially could be contaminated prior to detection by a single peripheral ground water monitoring system. Therefore, the Agency believes ground water is more adequately protected if the general requirement is for separate ground water monitoring systems for each regulated unit.

Subparagraph J.3. describes the requirements for the construction and installation of ground water monitoring wells. Well construction and installation must be in accordance with 7 MCAR §§ 1.210-1.224, the Minnesota Department of Health Water Well

Construction Code. This is reasonable because improperly installed and constructed wells can provide conduits for the migration of contaminants as well as yielding spurious ground water quality data. Subparagraphs J.4. and J.5. require that a consistent protocol for sampling, handling and analyzing ground water samples be established. These procedures are needed in order to provide high quality analytical results and to allow valid comparison of analytical results obtained at different times.

Subparagraph J.6. requires at least an annual determination of the flow rates of the ground water being monitored. Ground water flow directions must be determined at least quarterly. These requirements provide data to be used to determine the extent of contamination in the event of leakage from the unit. Because it is possible for the directions of ground water flow to change, quarterly determinations are important to ensure that data from the upgradient and downgradient monitoring wells are still relevant.

Subparagraph J.7. establishes the procedures to be followed to determine background ground water quality. It requires that background ground water quality be established for each hazardous constituent which may reasonably be expected to be in or derived from the wastes to be managed at the facility. This may in some cases result in establishing background values for more hazardous constituents than would result under 40 C.F.R. § 264.97(g)



which only requires that the ground water monitoring program establish background ground water quality for each of the hazardous constituents or monitoring parameters specified in the permit. However, the Agency believes that it is preferable to require that background values be established for each hazardous constituent which is likely to be in or derived from the wastes managed at a facility.

Background values which are established at the outset are more indicative of actual conditions than those established after a facility receives waste. Establishing background values prior to receiving waste allows data from downgradient wells to be used in establishing these background values. These wells sample ground water quality at the point of compliance at a time when it has not been affected by the facility. Thus, the quality of background ground water in the absence of a facility is documented. By establishing these background values at the outset, the owner and operator is informed of what the ground water protection standard will be for those hazardous constituents which the facility will receive or generate. Establishing the background values for likely hazardous constituents when the permit is issued also avoids the delays which are inherent in establishing background values during the detection monitoring program. If a ground water protection standard already exists for these hazardous constituents, corrective action can be expedited.

Subparagraph J.7. also provides that the Agency may require background data to be collected on nonhazardous chemical components and physical properties related to ground water quality. This is necessary because nonhazardous parameters from the hazardous wastes received at a facility may affect ground water quality. The natural chemistry of the ground water may also provide information about the ground water system as a whole which will affect the design and operation of the monitoring system. The information on ground water quality required in the specific hydrogeologic reports, 6 MCAR §§ 4.9317 B., 4.9318 B., and 4.9320 B., may fulfill part of this need.

Unlike the corresponding EPA regulation, subparagraph J.7. permits the Agency to also require more than a single background ground water monitoring system for facilities which are underlain by multiple soil or rock formations if these formations have significant hydraulic or compositional differences. In many areas of Minnesota the saturated zone includes several types of formations. Because of their different compositions and hydraulic properties the chemistry of ground water contained in these different formations varies. Therefore, if background ground water quality is established by using samples from a single system, which has wells in different formations, spurious results may be obtained. A background value established in this manner will be an average of values from ground waters with varying chemistry. This may make the determination of whether the

ground water protection standard has been violated less certain when a sample from a single well is compared with the background value. For this reason it is reasonable to allow the Agency the flexibility to require more than one background ground water quality system in such instances.

Subparagraph J.7. further provides that background ground water quality at new facilities will be based on data from at least quarterly sampling one year prior to operation. The chemistry of ground water may vary substantially over time. A major source of variation can be seasonal fluctuations related to changes in precipitation and infiltration. As discussed at 47 F.R. 32301 (July 26, 1982) by sampling the ground water for a year, seasonal variations in ground water quality can be included in the background data. For existing facilities and for facilities in a compliance monitoring program, the samples collected for background ground water quality must, to the extent feasible, account for seasonal fluctuations in ground water quality.

Background ground water quality is more difficult to establish at existing facilities where it is possible that the water quality may already be affected by leakage from the facility. It is therefore reasonable for these rules to provide standards for establishing background ground water quality under such conditions. Paragraph J. requires that sampling be conducted at wells which are upgradient from the existing facility. However, under certain hydrologic conditions, better data can be obtained

from wells which are not upgradient and it is reasonable to allow the sampling of downgradient wells if it can be shown that accurate data can be obtained.

Subparagraphs J.7.-J.9. concern methods of sampling and statistical analysis. It is reasonable to require that these procedures be followed as they are necessary to ensure that sufficient ground water samples are taken and that they are evaluated by appropriate statistical methods. The Agency is relying on the EPA's expertise in adopting these procedures. The rationale for using these procedures is set forth at 47 F.R. 32302 -32304 (July 26, 1982).

Subparagraph J.10. sets out the information related to the ground water monitoring program which the owner or operator must provide to the Agency. It is reasonable for the Agency to have the field data, analytical data, and statistical calculations used to establish and comply with the various ground water protection activities under paragraphs J.-M. so that the Agency may perform its own review and analysis of these data and calculations. In addition, the public may wish to have access to this information and it will be made available to them by the Agency.

Paragraph K. sets forth the responsibilities of an owner or operator in establishing a detection monitoring program. The monitoring parameters and hazardous constituents in the facility permit are determined after considering a variety of factors

including the types and quantity of the wastes, the characteristics of these wastes in the environment, their detectability in ground water, and their background concentrations in the ground water. In general, these factors will determine the suitability of each parameter or hazardous constituent for ground water monitoring. This paragraph is based on the provisions of 40 C.F.R. § 264.98 and is discussed in more detail at 47 F.R. 32304 - 32308 (July 26, 1982).

Specifically, paragraph K. requires that the ground water monitoring system which is installed meet the requirements of subparagraphs J.1.b.-c., J.2., and J.3. The reasonableness of these requirements, which ensure that representative ground water samples will be collected, has been discussed previously. The owner or operator must also establish a background value for each monitoring parameter or hazardous constituent which is likely to be in or derived from the wastes managed at the facility. As discussed above, early establishment of background values has two major advantages: some delays which are inherent in initiating a compliance monitoring program can be avoided, and in most instances the background values can be established at downgradient wells in lieu of upgradient wells.

Paragraph K. requires that either these background values or the procedures to be used to calculate them must be specified in a facility permit. The intent of the rules is to establish

background values prior to the issuance of a permit whenever it is feasible. However, in some instances the quality and the reliability of the background values will not be lessened if they are established after the facility permit is issued. For example, this may be the case for new facilities which will not receive waste immediately after permitting because of the time required for site preparation. This may also be the case for some existing facilities where upgradient wells are to be used for background sampling. Allowing background values to be established in accordance with procedures in the facility permit is reasonable because valid background values can still be obtained in these cases.

Paragraph K. requires owners or operators of double lined surface impoundments, landfills, and waste piles, and land treatment units to determine ground water quality at each monitoring well at the compliance point for each parameter or constituent established under subparagraph K.1. at least semi-annually during the active life of a regulated unit, including the closure period, and the post-closure care period. With the exception of land treatment units, EPA does not require owners or operators of these facilities to monitor ground water. EPA based its decision to not require ground water monitoring for these facilities on its belief that such facilities contain a leak detection system to detect whether a unit's upper liner has failed. Although the leak detection

system is an integral part of the facility's ground water protection program, there are several reasons to also require ground water monitoring from the very outset. The use of two liners and an intervening leak or liquid detection system is a relatively recent development in the design of hazardous waste facilities. Therefore, it is not yet certain under what conditions, if any, this system would fail to detect liquid between the liners. In addition, by initially establishing a ground water monitoring system, background ground water quality can be established in wells located at the point of compliance and delays, which are inherent in initiating a ground water program, can be avoided. These advantages are further discussed with respect to paragraph J.

Subparagraphs K.4.-K.5. provide a two phased approach to detection monitoring. If the unit has a double liner which is not leaking, a basic monitoring program must be conducted at least semi-annually. However, this monitoring program must be increased if there is evidence that an upper liner is leaking, that hazardous constituents are leaving the treatment zone, or if the unit has only a single liner. Under these conditions, the rule requires at least quarterly determinations of ground water quality for all hazardous constituents which are reasonably expected to be in or derived from the waste contained in the unit, rather than the semi-annual sampling for only the monitoring parameters.

The owner or operator must determine whether there is a statistically significant increase over background for every parameter in the permit every time ground water quality is determined. Subparagraph K.7. requires the reporting of the results of this analysis, within the period specified in the permit. The federal regulation requires that the data be submitted within a reasonable time. It is reasonable to expect the owner or operator to identify the average time required to analyze samples in advance of obtaining a permit. This information will be used during the permitting process to determine the reporting period in the permit.

If it is determined as a result of sampling that there has been a statistically significant increase, the owner or operator must notify the Agency and begin a series of actions to determine the extent of contamination and to correct the problem if necessary. The owner or operator must immediately sample the ground water at all the monitoring wells, have the samples analyzed for all possible hazardous constituents and determine background values for all hazardous constituents. Because an increase in one of the detection monitoring parameters indicates a strong possibility of liner failure or treatment zone breakthrough, it is reasonable to require that the ground water be analyzed for all hazardous constituents. If the unit is leaking, such analyses should not only detect hazardous constituents which are known to have been accepted at the unit, and also those which may have been illegally or



inadvertantly accepted. In addition, detection of hazardous constituents which are not permitted at a facility may suggest an alternative source of contamination. For these reasons, the proposed rule requires a complete ground water analysis for all hazardous constituents, rather than merely the ones which are known to be accepted at the facility.

With this data, it must then be determined whether there has been any increase in any constituent at the compliance point. If a statistically significant increase is detected, compliance monitoring must begin. Increases in hazardous constituents in the ground water signal the need for an accelerated ground water monitoring program because of the increased potential for contaminant migration. The preliminary compliance monitoring program may be revised as appropriate based on the information available. Such permit revisions are reasonable because they will be based on the most current data which accurately reflects the conditions which exist regarding the contamination.

Subparagraph K.9. allows the owner or operator to demonstrate that the contamination is derived from a source other than the regulated unit. Although the owner or operator may make such a demonstration, it is not reasonable to allow the implementation of compliance monitoring to be delayed until the actual contamination source is detected. The owner or operator must proceed with the necessary compliance monitoring while the demonstration is being conducted. The compliance monitoring requirements are not unreasonably

burdensome, and the need for a rapid response to contamination is extremely important. The proposed rule allows the owner or operator seven days to notify the Agency of his or her intent to make the determination and 90 days for conducting the actual demonstration. Ninety days provides adequate time to conduct extensive analyses but still provides a definite end date. If an alternate source cannot be discovered within 90 days, it is not reasonable to assume that more time will permit its discovery. However, a shorter period is not necessarily more reasonable because compliance monitoring and corrective actions will still be underway and unaffected by the concurrent demonstration to prove another source of the contamination.

Paragraph L. establishes the requirements for a compliance monitoring program and is based on 40 C.F.R. § 264.99. The basis for the EPA regulations is set forth at 47 F.R. 32308 - 32310 (July 26, 1982). Once it is determined that there are hazardous constituents in the ground water, the owner or operator must implement a compliance monitoring program.

Subparagraph L.1. requires an owner or operator to monitor the ground water to determine whether regulated units are in compliance with the ground water protection standards of paragraph C. The compliance monitoring program differs from detection monitoring by requiring more frequent sampling for increased parameters. This is reasonable, as compliance monitoring occurs when the ground water is believed to be contaminated. Subparagraph L.1. also

provides that the Agency shall specify in the facility permit a list of the hazardous constituents, concentration limits for each of these hazardous constituents, the compliance point and the compliance period. Inclusion of these items in the facility permit enables the owner or operator, the public, local units of government, regulators, and other interested parties to be aware from the outset of the requirements which the facility must meet.

Subparagraph L.2. requires that ground water monitoring systems which are installed at facilities must comply with subparagraphs J.1.b. and c., J.2., and J.3. These sections describe the requirements which ground water monitoring systems must meet with respect to their location and installation. As discussed above, these requirements are necessary for ground water monitoring systems to yield meaningful ground water samples. Thus it is reasonable that any ground water monitoring system installed at a facility meet these requirements.

Subparagraph L.3. sets out how a concentration limit specified in a facility permit will be established where it is based on background ground water quality. Background ground water sampling must be in accordance with the provisions of subparagraph J.7. Subparagraph L.4. requires the owner or operator to determine the concentration of hazardous constituents in ground water at each monitoring well at the compliance point at least quarterly during the compliance period. The more frequent sampling is appropriate as a compliance monitoring program is only initiated after a sta-

tistically significant increase of a hazardous constituent has been detected in the ground water which provides a reasonable basis for assuming that leakage and contamination have occurred.

Subparagraph L.5. requires the owner or operator to analyze samples from all monitoring wells at the compliance point for all constituents listed in 6 MCAR § 4.9137 at least annually. This is necessary in order to determine whether additional hazardous constituents are present in the monitoring wells. If additional hazardous constituents are detected, their concentrations must be reported to the Director. The Agency will then modify the facility permit to include concentration limits for those additional hazardous constituents which are detected. Subparagraphs L.6. and L.7. establish the sampling and analytical techniques and the statistical procedures to be used during compliance monitoring.

Subparagraph L.8. provides that if the owner or operator determines that a ground water protection standard is being exceeded at any monitoring well at the point of compliance, he or she must notify the Agency in writing within seven days and indicate which concentration limits have been exceeded. The owner or operator must then institute the corrective action program specified in the permit and submit to the Agency an application for permit modification, if necessary, to supplement the corrective action program to meet the requirements of paragraph M., within 90 days.

This time frame for implementing corrective action is different from that in 40 C.F.R. § 264.99. The federal regulations require the owner or operator to submit an application for permit modification to establish a corrective action program within 180 days, or within 90 days if an engineering feasibility study has been previously submitted. Under the federal approach a significant delay could occur between the detection of a violation of a ground water protection standard and the implementation of a corrective action program. To remedy this, 6 MCAR § 4.9297 B.4. requires the owner or operator to submit a corrective action plan as part of the facility permit application. The Agency will review and approve this plan prior to the issuance of the facility permit. This enables the owner or operator to initiate the corrective action program after concentration limits have been exceeded rather than only being able to propose a course of action. In most cases it is likely that some modifications to the approved corrective action plan will be necessary due to specific details of a release of hazardous constituents which cannot be predicted when the corrective action plan is approved. Therefore the owner or operator must submit an application to modify the permit within 90 days to meet the requirements of paragraph M. These shorter time frames are reasonable because the program has already been approved.

Subparagraph L.8. also requires that the owner or operator submit a detailed description of the corrective actions that will

achieve compliance with the ground water protection standard and a plan for a ground water monitoring program which will demonstrate the effectiveness of the corrective action program. This requirement is reasonable for without such a ground water monitoring program the effectiveness of the corrective action cannot be evaluated.

Subparagraph L.8. further requires the owner or operator to cease accepting wastes at the facility if the concentration limits in the permit are being exceeded at any monitoring well at the property line. To evaluate if this is occurring, the ground water monitoring program must be capable of demonstrating compliance with the concentration limits in the permit in the ground water at the downgradient portion of the property line of the facility. It is reasonable to require that a facility stop accepting wastes if hazardous constituents from the wastes have migrated off the facility's property. Once the concentration of hazardous constituents beyond the property line exceeds the concentration limits in the permit, the quality of the ground water for the adjacent property has been impaired. The addition of wastes to a facility which has already affected ground water under adjacent property is not appropriate, since acceptance of additional wastes might aggravate the contamination. However, if the owner or operator can demonstrate that specific individual units within a facility have not violated the ground water protection standard at the property line, the owner or operator may

resume accepting wastes at those units for which a demonstration can be made following Agency approval of the demonstration. This provision is reasonable for multiple unit facilities; otherwise individual units which are not violating the ground water protection standard might be prohibited from accepting wastes. If this occurred, then units in multiple unit facilities would be subject to more stringent requirements than single unit facilities.

Subparagraph L.9. provides the owner or operator with the opportunity to demonstrate that a source other than a regulated unit caused the increase above the ground water protection standard or to demonstrate that the increase resulted from error in sampling, analysis, or evaluation. It is reasonable to allow the owner or operator an opportunity to make this demonstration. If an increase is not caused by a regulated unit, then the owner or operator should not be required to implement a corrective action program which is designed for the regulated unit. If an increase above the ground water protection standard does exist but is not caused by a regulated unit it is also important to have this information so the Agency can attempt to locate the source of the contamination. However, since any violation of the ground water protection standard is potentially serious and corrective action must be initiated as soon as practical, the owner or operator must continue to monitor in accordance with the compliance monitoring program and initiate the corrective action program in

the time specified, even if the owner or operator plans to attempt to make a demonstration that a regulated unit is not the cause of the violation.

Paragraph M. establishes the corrective action program and is based on the provisions of 40 C.F.R. § 264.100. The rationale for that regulation is discussed at 47 F.R. 32310 - 32312 (July 26, 1982). The goal of the corrective action program is to bring the regulated unit into compliance with the ground water protection standard. The owner or operator must implement a corrective action program that prevents hazardous constituents from exceeding their respective concentration limits at the compliance point by removing the hazardous waste constituents or treating them in place. Measures which only prevent migration of hazardous constituents in the ground water for some period of time simply defer adverse ground water effects until some later time. Therefore, measures which only modify the gradient of the ground water or create barriers to ground water movement, such as slurry walls, do not, by themselves, constitute an adequate corrective action program. Such measures can, however, be used in conjunction with other measures, such as ground water withdrawal, to fulfill the requirements of this paragraph.

Subparagraph M.3. requires the owner or operator to begin corrective action within one week after the ground water protection standard is exceeded, unless the permit provides an



alternate period. While it is unlikely that a comprehensive corrective action program can be implemented in such a short time, it is expected that the corrective action can be initiated and planning to implement the remainder of the program can be underway within a week. It is reasonable to require that corrective action be started expeditiously as the risk to human health and the environment is likely to increase with time.

Subparagraph M.4. requires the owner or operator to establish and implement a ground water monitoring program to demonstrate the effectiveness of the corrective action program. The ground water monitoring program must also include the establishment and monitoring of ground water monitoring wells at the downgradient portion of the facility property line. These ground water monitoring programs are necessary and reasonable to assess the scope of the corrective action which is required. However, it is likely that the owner or operator will need to install wells in addition to those installed as part of the compliance monitoring program to document the extent of the ground water which has been contaminated. The installation of the ground water monitoring wells at the downgradient portion of the property line is necessary to determine if the facility can continue to accept wastes as provided in subparagraph L.8.

Subparagraph M.5. requires the owner or operator to conduct a corrective action program to remove or treat in place any hazardous constituents that exceed concentration limits in ground water that

has passed the compliance point. This requirement differs from 40 C.F.R. § 264.100 which limits the corrective action to removing or treating in place the hazardous constituents in excess of the concentration limits between the compliance point and the property line. Under the federal regulation corrective action for ground water downgradient of the property line would have to be addressed under other programs. The Agency believes that there are several problems with this approach. Because a separate procedure for dealing with ground water downgradient of the property line would have to be established, it could lead to significant delays in implementing corrective action even though the responsible party is known and has already committed resources to corrective action within the property boundaries. A delay in implementing corrective action downgradient of the property line could allow the volume of the ground water which exceeds the concentration limits to increase. The leading edge of a plume of ground water contaminants will be the first portion to move beyond the property line and will be the first to encounter downgradient water supply wells if they are present. Thus, by imposing an artificial division on a hydrogeologic problem, the correction of that problem may be delayed and complicated. The risk to human health and the environment is also likely to increase. Addressing the corrective action program as a whole and requiring it to extend beyond the property boundary, if necessary, is more reasonable.

Subparagraph M.5. also requires that corrective action measures be initiated and completed within a reasonable period of

time considering the extent of contamination. This requirement is obviously necessary and reasonable in order to minimize the risk to human health and the environment. If corrective action is not initiated or completed within a reasonable period of time considering the extent of contamination, the owner or operator must cease accepting wastes at the facility. It is not reasonable to continue to allow wastes to be accepted at a facility if the owner or operator has not implemented or completed corrective action within a reasonable period of time. This is because based on past corrective action, or lack thereof, there will be no assurance that if hazardous constituents from these new wastes enter the ground water that corrective action will be initiated and completed within a reasonable period of time.

Subparagraph M.6. requires the owner or operator to continue corrective action measures during the compliance period to the extent necessary to ensure that a ground water protection standard is not exceeded at any monitoring well. If the owner or operator is conducting corrective action at the end of the compliance period, he must continue that corrective action for as long as necessary to achieve compliance with the ground water protection standard at all monitoring wells. This is necessary to avoid the cessation of corrective action simply because the compliance period has ended. The owner or operator may terminate corrective action measures taken beyond the period equal to the

active life of the waste management area, including the closure period, if it can be demonstrated, based on data from the ground water monitoring program under subparagraph M.4., that the ground water protection standard has not been exceeded for a period of five consecutive years at any monitoring well. As outlined under the discussion of paragraph I., five years during which the ground water standard is not exceeded is a reasonable period of time to require before corrective action can be terminated.

6 MCAR § 4.9298

Rule 6 MCAR § 4.9298 contains the standards applicable to the closure of all TSDF's. The specific language of this rule has been taken from 40 C.F.R. §§ 264.110-112 since existing rules 6 MCAR §§ 4.9004 D. and E. do not cover closure activities in the detail required by EPA for authorization. The Agency is relying on the EPA background documents on closure listed in Part VIII. as support for this rule and 6 MCAR § 4.9299. The objective of this rule is to ensure that all hazardous waste facilities close in the manner necessary to protect human health and the environment, control, minimize, or eliminate the escape of pollutants and minimize the need for post closure maintenance. To accomplish this objective, it is necessary that facility owners and operators plan in advance of closure the manner in which they will dispose of any remaining hazardous waste and decontaminate any equipment used in the process. Therefore,

facility owners and operators are required to submit a closure plan as part of the permit application.

It is reasonable to require a closure plan for facilities which handle hazardous waste because preplanning is essential in estimating the type and quantity of waste which must be disposed of at the time of closure. Without adequate planning, containers may be left at facilities for long periods of time thereby increasing the chances for contamination of the surrounding area due to rusting drums, insufficient cover, and improper disposal of wastes. The closure plan serves as an impetus to such planning and also provides the Agency with an opportunity to prevent any damage to human health or the environment which might occur from facilities which did not plan ahead for the inventories of waste which would be present at closure and how disposal of these wastes should take place.

6 MCAR § 4.9299

Proposed rule 6 MCAR § 4.9299 establishes the time limit for completion of closure activities at a facility and the procedures for extension of this time limit. This rule is taken from 40 C.F.R. §§ 264.113 - 264.115 and requires that all hazardous waste must be treated, disposed of or removed from the site within 90 days after receiving the last volume of hazardous waste and that closure activities must be completed within 180 days. It is reasonable to place time constraints on the completion of closure activities

since the longer a facility is left unattended with no apparent problems the less urgent proper closure appears thereby increasing the possibility of damage to human health or the environment due to the general deterioration of the facility and the containment areas. The proposed rule includes provisions for extending the closure time if the facility owner or operator demonstrates a reasonable justification as to why closure activities will take longer than the allotted 90 or 180 days. This rule is reasonable since it provides measures to prevent damage to human health and the environment from unnecessary delays in closure yet allows for a reasonable degree of flexibility in conducting closure activities.

6 MCAR § 4.9299 also contains a provision permitting closure to be ordered by the Director if the owner or operator fails to keep the applicable financial assurance in effect. This provision has been added to clarify that closure may occur prior to the expected date if such non-compliance occurs, and is consistent with the provisions of the rules on financial assurance. This provision is reasonable since it puts the owner or operator on notice that non-compliance with applicable financial assurance provisions could result in closure of the facility. If closure was not ordered when such non-compliance occurs, the financial assurance mechanism would fail to have any meaning and the funds necessary for closure would no longer be available. Since this could lead to damage to human health and the environment from facilities which

are not closed in a timely manner due to lack of funds, it is reasonable to include such a provision in this rule regarding closure activities.

6 MCAR § 4.9300

Rule 6 MCAR § 4.9300 contains the requirements for post-closure care of hazardous waste land disposal facilities and certain waste piles and surface impoundments, and is based on 40 C.F.R. § 264.118. The Agency is relying on the EPA background documents on post-closure care listed in Part VIII. as support for this rule and 6 MCAR § 4.9301. The rule requires the submittal of a post-closure plan which includes the monitoring and maintenance practices for each facility necessary to detect and minimize any potential harm to human health and the environment from contamination of the surrounding air, land, or waters. The closure of a facility does not immediately eliminate the possibility of damage from contamination as it is virtually impossible to immediately render all hazardous wastes nonhazardous in land treatment facilities, and disposal facilities may deteriorate over time. Therefore, post-closure monitoring and maintenance is imperative to detect and prevent any possible situations which could harm human health and the environment. Since some storage or treatment waste piles and surface impoundments have the potential to become disposal facilities at closure if not all of the hazardous wastes

and contaminated materials can be removed, it is reasonable to require a post-closure plan to address this possibility.

6 MCAR § 4.9301

Rule 6 MCAR § 4.9301 sets forth the time period for post-closure care and limits the use of a facility's property during this time. This rule is taken from 40 C.F.R. § 264.117. This rule is reasonable since if no time limit were placed on the post-closure care period, an owner or operator could be confused as to whether he is required to monitor indefinitely or not at all. In specifying the time period of 30 years, the Agency is relying on the work done by EPA. However, the staff believes that a breach in the containment system should be detectable in this period. An allowance has been made for lengthening or shortening the post-closure care based on technical documentation that conditions warrant such a change from the prescribed time frame. Limiting the post-closure use of property is needed to protect the integrity of the existing containment system and prevent the release of hazardous waste into the environment. This requirement does not prevent all uses of the property, but rather limits the use to that which will not disturb any hazardous waste remaining on-site after closure.

6 MCAR § 4.9302

Rule 6 MCAR § 4.9302, which is taken from 40 C.F.R. § 264.119, requires that local land authorities be notified by the



facility owner or operator of all closure activities which occurred at a facility and provided with a survey plat of the site indicating the location and dimension of disposal areas. This is a reasonable requirement since the local authorities with jurisdiction over land use must know the type, how much, and where any hazardous waste has been disposed in order to ensure that all future activities on the property are compatible with site conditions. Additionally, should remedial actions be necessary, the survey plat would provide the responsible party with locations of the waste.

6 MCAR § 4.9303

Rule 6 MCAR § 4.9303 requires that the deed to any property where hazardous waste has been disposed of include a notation to that effect. This requirement is taken from 40 C.F.R. § 264.120. It is necessary for new owners to know what has occurred on the property, what type of waste remains, and the land use limitations in effect so that a new owner does not unwittingly use the property in a way which could endanger human health and the environment. The most appropriate method to guarantee this notification is the deed since it is routinely reviewed during any change of ownership.

6 MCAR § 4.9304 - 4.9314

Rules 6 MCAR §§ 4.9304 through 4.9314 establish financial requirements for owners and operators of hazardous waste

facilities. Financial responsibility requirements are necessary and desirable to assure (1) that funds will be available for proper closure of facilities that treat, store, or dispose of hazardous waste, for post-closure care of hazardous waste disposal sites and for corrective action for surface impoundments, waste piles, land treatment units, and landfills; and (2) that a pool of funds will be available during the operating life of a facility from which third parties can seek compensation for injuries to people and property resulting from operation of the facilities.

The need for assurance of financial responsibility for closure, post-closure care and corrective action is indicated by the many instances of environmental damage resulting from abandonment of hazardous waste facilities and other failures by owners and operators to provide adequately for closure, post-closure care and corrective action. The likelihood of such failure is increased by the fact that the economic value of the facility is either at a minimum or nonexistent when closure and post-closure care are expected to commence, or once corrective action becomes necessary. For most disposal facilities, post-closure care must extend for 30 years beyond the operating life of the facility. Since corrective action could be required at various times during the active life and during the post-closure care period or beyond, it is necessary to establish sufficient funds early in the facility's life. Most likely, a significant number of owners and operators will lack the ability to provide for adequate closure, post-closure

care and corrective action unless effective requirements for financial assurance are established.

The need for assurance that a pool of funds will be available from which third parties can seek compensation is indicated by the numerous instances in which third parties have suffered personal injury and property damages caused by the operation of hazardous waste management facilities. Consequently a requirement that owners and operators must secure liability coverage which covers both personal injuries and property damage from their facilities has been established. Moreover, the inherent risks associated with hazardous waste indicate that such a requirement is desirable.

The requirements in rules 6 MCAR §§ 4.9304 - 4.9308 and 4.9311 - 4.9314 are based on EPA's regulations found in 40 C.F.R. §§ 264.140 - 264.151. A discussion on the reasonableness of these regulations is given in the EPA Background Documents on Parts 264 and 265, Subpart H, Financial Requirements, which are referenced in Part VIII., and at 46 F.R. 2821 - 2829 (January 12, 1981), 47 F.R. 15032 - 15074 (April 7, 1982) and 47 F.R. 16544 - 16544 (April 16, 1982). Since EPA has done a substantial amount of work developing the financial requirements and ensuring that the requirements are consistent with current practices in the financial community, it is reasonable to utilize these requirements as a basis for the state requirements.

6 MCAR § 4.9304

Rule 6 MCAR § 4.9304 contains provisions on the applicability of the financial responsibility rules and definitions of terms used in these rules. These provisions are taken from 40 C.F.R. §§ 264.140 and 264.141 and are self explanatory.

6 MCAR § 4.9305

Rule 6 MCAR § 4.9305 requires the facility owner or operator to have a written estimate of the cost of closing the facility, to update the estimate whenever changes in the closure plan affect the cost of closure and to adjust the cost estimate annually for inflation. This rule is taken from 40 C.F.R. § 264.142.

6 MCAR § 4.9306

Rule 6 MCAR § 4.9306 sets forth the methods which may be used by an owner or operator to ensure that funds will be available for closure. This rule permits the use of trust funds, surety bonds, letters of credit, insurance, a financial test and a corporate guarantee to satisfy the financial assurance requirements and sets forth requirements governing the establishment of the mechanism chosen and the manner or formula in which any payments must be made. The rule permits the owner or operator to satisfy

the requirements by using more than one financial mechanism for one facility or one financial mechanism for multiple facilities. This rule is taken from 40 C.F.R. § 264.143.

6 MCAR § 4.9307

Rule 6 MCAR § 4.9307 requires the owner or operator of a facility to have a written estimate of the annual cost of post-closure care of the facility and to revise that cost estimate in the same manner that the closure cost estimate is revised. This rule is based on 40 C.F.R. § 264.144.

6 MCAR § 4.9308

Rule 6 MCAR § 4.9308 requires the owner or operator to establish financial assurance for post-closure care of the facility. The methods that may be used are the same as the methods which may be used to provide financial assurance for closure. The provisions of this rule are taken from 40 C.F.R. § 264.145.

6 MCAR § 4.9309 and 4.9310

Rules 6 MCAR §§ 4.9309 and 4.9310 require the owners or operators of surface impoundments, waste piles, land treatment units, and landfills to demonstrate financial responsibility for corrective action. Although EPA has indicated that such financial

assurance may be necessary, EPA has not as yet adopted such a requirement. See 47 F.R. 32279 - 32280 (July 26, 1982). The Agency, however, has decided not to wait for EPA to adopt a regulation and has proposed financial assurance requirements for corrective action based on the financial assurance requirements for closure and post-closure care.

At facilities where all other ground water protection measures have failed and hazardous constituents have entered the ground water, corrective action measures are the key means for protecting human health and the environment. It is therefore essential that the owner or operator be able to perform corrective action if and when it is needed. Corrective action can be expensive. It may involve pumping and treating large volumes of contaminated ground water over a long period of time. In addition, as discussed above, under certain circumstances facilities undergoing corrective action may be required to stop taking waste. This means that at a time when a facility is undertaking a major expense, it may have its income cut off or substantially reduced. Under such circumstances some facility owners or operators may be unwilling or financially unable to undertake corrective action. Financial responsibility requirements for corrective action will assure that money will be available when needed to conduct necessary corrective action measures.

The report entitled "Comments of the Environmental Defense Fund and The Cram and Forster Insurance Companies on Financial Assurance Requirements for Corrective Action", November 22, 1982, supports the Agency's position that financial assurance for corrective action is necessary and is best required during the facility's life as a permit condition. Such a requirement encourages the facility owner or operator to site and design the facility in a manner which would minimize the cost of corrective action and the cost of providing financial assurance for corrective action. This report, which is listed in Part VIII, is being relied on by the Agency as additional support for 6 MCAR §§ 4.9309 and 4.9310.

In recent years both Minnesota and the federal government adopted "Superfund" legislation to provide government funding to clean up past hazardous waste disposal sites for which no other source of clean up funds is available. The intent of RCRA and the regulations adopted pursuant thereto and of 6 MCAR §§ 4.9100 - 4.9560 is to regulate new and existing hazardous waste disposal facilities so that they do not become problem sites for which no clean up funds other than "Superfund funds" are available. Design and operating requirements are not foolproof. A substantial portion of Minnesota's population relies on ground water as its drinking water supply. To assure that corrective action will occur should ground water at a hazardous waste disposal facility

become contaminated, it would be unreasonable for the Agency not to require owners and operators to provide financial assurance for corrective action before the facility begins accepting waste.

The requirements for demonstrating financial responsibility for corrective action are identical to those for demonstrating financial responsibility for closure and post closure care. Specifically 6 MCAR § 4.9309 requires the owner or operator of a facility to have a written estimate of the cost of performing corrective action so that the amount that the financial mechanism must cover will be known, to adjust the cost estimate annually for inflation and whenever changes in the corrective action plan increase the cost of corrective action.

Rule 6 MCAR § 4.9310 specifically requires the owner or operator to provide financial assurance for corrective action using any of the financial mechanisms which may be used to demonstrate financial assurance for closure and post closure care.

Some concerns have been raised regarding the provisions for corrective action insurance. It has been suggested that the provisions of 6 MCAR § 4.9310 E. regarding insurance be deleted since corrective action insurance is not currently offered and may not be offered in the future due to the lack of data on cost and frequency of corrective action. Although such coverage may not currently exist, the Agency staff has decided to include the insurance option so that if an owner or operator does obtain such



coverage the Agency would be able to accept it as proof of financial assurance without having to amend the hazardous waste rules. By including the insurance option, the Agency has not required the insurance industry to provide such coverage but rather has set forth the conditions such coverage must meet if it is to satisfy the corrective action financial assurance requirements.

Concerns have also been raised with respect to the provisions regarding cancellation and the point at which corrective action must begin. It has been suggested that the insurer should have the option of cancelling corrective action insurance. The Agency recognizes the insurer's need to limit liability and risk by maintaining the right to cancel or terminate insurance policies, particularly in cases where the insured has committed an act of default as set forth in the insurance contract. However, the Agency is concerned that coverage be maintained for a facility as long as it required under the rules, even if corrective action has become necessary. Therefore, the cancellation provisions of closure and post-closure insurance have been included in corrective action insurance. The Agency believes that if such provisions were acceptable to the insurance industry with regard to post-closure, they should also be acceptable regarding corrective action. Since the post-closure period could be extended beyond the 30-year limit, the uncertainties of post-closure would be comparable to

to those of corrective action.

The point at which corrective action must begin is specified in 6 MCAR § 4.9297. The specific measures for corrective action will be specified in the permit. Corrective action begins once a ground water protection standard is violated at a facility. To assure that an actual violation has occurred, ground water monitoring wells are resampled after a violation is observed. If the violation is verified in the second sample, then corrective action begins. The ground water monitoring program requirements are set up to maximize detection of actual increases in ground water monitoring parameters while also accounting for normal variations in groundwater which are not due to a release at the facility. Although the actual frequency of corrective action cannot be specified, the rule does clearly specify under what conditions corrective action is to begin. Although there are many uncertainties associated with corrective action, siting and design decisions will greatly influence the need for corrective action. Accordingly the cost of providing financial assurance for corrective action, be it for insurance or some other mechanism, will encourage facility owners or operators to make decisions which serve to minimize this cost as well as the cost of corrective action.

6 MCAR § 4.9311

Rule 6 MCAR § 4.9311 is taken from 40 C.F.R. § 264.146 and permits the facility owner or operator to use the same financial

mechanism to provide financial assurance for both closure and post-closure care for one or more facilities. The Agency has expanded the federal regulation to allow the same financial mechanism to be used for closure, post-closure care and corrective action. This provision allows facility owners and operators to combine financial mechanisms so long as the amount(s) available are not reduced.

6 MCAR § 4.9312

Rule 6 MCAR § 4.9312 sets forth the general liability requirements for owners or operators of TSDFs. The provisions of this rule are taken from 40 C.F.R. § 264.147. This rule includes a requirement that all facility owners or operators obtain liability coverage for sudden accidents amounting to \$1 million per occurrence with a \$2 million annual aggregate. 6 MCAR § 4.9312 includes a requirement that owners or operators of surface impoundments, landfills and land treatment facilities obtain liability coverage for non-sudden accidents amounting to \$3 million per occurrence with a \$6 million annual aggregate. For existing facilities the requirements for non-sudden liability coverage are being phased in over a 30 month period. 6 MCAR § 4.9312 permits the use of liability insurance, a financial test, or both to satisfy the liability coverage requirements and sets forth requirements governing the establishment of the mechanism

chosen. A variance procedure has been included to allow owners or operators to demonstrate that the levels of required coverage are not consistent with the degree and duration of risks at their facilities and to seek an adjusted level of coverage. A provision allowing the Agency to increase the level of required coverage if the degree and duration of risks at a facility or group of facilities warrants a higher level of coverage has also been included.

6 MCAR § 4.9313

Rule 6 MCAR § 4.9313 is taken from 40 C.F.R. § 264.148 and sets forth what must be done by the owner or operator when the institution issuing a trust fund, bond, letter of credit or insurance policy goes bankrupt or is otherwise incapacitated. The rule provides that the owner or operator is required to obtain other financial assurance or liability coverage within 60 days.

6 MCAR § 4.9314

Rule 6 MCAR § 4.9314 sets forth the wording of the trust agreements, surety bonds, letters of credit, certificates of insurance, letters from chief financial officers, corporate guarantees and liability endorsements which may be used to satisfy the requirements of 6 MCAR §§ 4.9306, 4.9308, 4.9310 and 4.9312. These documents were developed by EPA and are identical

to the documents set forth at 40 C.F.R. § 264.151, except that provisions for corrective action have been added.

The remaining rules in Chapter Five set forth standards applicable to specific types of hazardous waste facilities. These rules govern the storage, treatment and disposal of hazardous waste in containers, tanks, surface impoundments, waste piles, land treatment units, landfills and thermal treatment facilities.

6 MCAR § 4.9315

6 MCAR § 4.9315 contains the standards applicable to owners and operators of facilities storing hazardous waste in containers. The standards include provisions for the condition of containers, the management and inspection of containers, a containment system, and the compatibility of hazardous waste with a container and other wastes. The requirements for management of containers are a hybrid of existing state rules 6 MCAR § 4.9004 C.3. and C.4. and federal regulations 40 C.F.R. §§ 264.170 - 264.178.

Drums and other containers provide an inexpensive means for generators of hazardous wastes to accumulate and store the wastes in a form which will be easy and relatively inexpensive to carry away. All too frequently, generators and others storing hazardous waste drums have simply put them somewhere out of sight, without any further concern about what would eventually happen to the wastes. The drums eventually weather and corrode, releasing their

contents. Dumps of decaying drums have seriously contaminated surface water and ground water; have emitted fumes which have killed vegetation and nauseated and sickened persons breathing those fumes; and have burned or exploded injuring facility personnel and sending clouds of toxic smoke and fumes over adjacent areas.

The most elementary and straightforward precautions will frequently eliminate these problems. This rule generally requires nothing more than simple good practices in the management of containers of hazardous waste and a level of care commensurate with the hazardous nature of the wastes being stored.

Specifically, containers are required to be sturdy, leak-proof, and made or lined with materials compatible with the waste to be stored. Wastes in containers not meeting these requirements must be recontainerized. Containers must be kept closed and managed so they do not rupture or leak. The purpose of this requirement is to minimize emissions of volatile wastes, to help protect ignitable or reactive wastes from sources of ignition or reaction, to help prevent spills, and to reduce the potential for mixing of incompatible wastes and direct contact of facility personnel with wastes.

The existing MPCA requirement, 6 MCAR § 4.9004 C.3.e.(4), that containers which when exposed to sunlight or moisture may create a hazardous condition must be kept in a covered area has

been retained. Weekly inspection of container storage areas for leaks and deterioration of containers is also required. Since corrosion of containers and the development of leaks is usually a slow process, weekly inspections should be adequate. Facilities storing hazardous waste with free liquid must also have a containment system capable of collecting and holding spills to prevent the contamination of local soils and ground water. Additionally, in order to prevent storage facilities from becoming abandoned disposal sites, specific closure requirements have been included to ensure all hazardous waste is removed and properly managed at the time of closure.

6 MCAR § 4.9315 also sets forth special requirements for ignitable or reactive wastes and for incompatible wastes. Containers of ignitable or reactive wastes must be 15 meters from the facility's property line. This requirement is taken from 40 C.F.R. § 264.176, which is based on the National Fire Protection Association's Flammable and Combustion Code of 1977, and is intended to protect adjacent property from the acute effects of explosions and fires that may occur in facilities that store flammable material. Incompatible wastes must not be placed in the same container, hazardous waste cannot be placed in an unwashed container that previously held an incompatible waste, and containers holding incompatible wastes should be separated or protected from each other and from incompatible wastes stored in open tanks, piles or surface impoundments to prevent mixing of incompatible wastes if containers should leak or break.

The language contained in the existing rule 6 MCAR § 4.9004 C.3.e. concerning the dimension limitations for storage areas have been dropped. The criteria did not allow for the stacking of containers. Storage areas are better regulated under the National Fire Protection Association and local fire codes for the varying types of wastes to be stored.

6 MCAR § 4.9316

6 MCAR § 4.9316 contains the standards for storing or treating hazardous wastes in above and below ground tanks. The standards include design, operation, and containment requirements and are a combination of existing rule 6 MCAR § 4.9004 C.3. and C.4. and EPA regulations 40 C.F.R. §§ 264.190 - 264.199. The best way to minimize potential dangers associated with a system failure is the proper design of tanks and the necessary operating precautions taken to prevent the leakage of hazardous waste into the environment. Therefore, 6 MCAR § 4.9316 provides that both above and below ground tanks must be designed and operated in a manner that provides for the maximum protection against the leakage of hazardous wastes. Adequate methods for the detection of leaks must be provided particularly in the case of an underground tank. Each tank must have appropriate controls to prevent overfilling, must be inspected weekly for deterioration and possible malfunctions, and must be compatible with the waste to be stored



or treated. A containment system must be provided to collect and hold all spills until the waste can be removed and managed in accordance with the hazardous waste rules. At closure, all hazardous waste residues must be removed and all equipment decontaminated. The storage of ignitable or reactive wastes must be in accordance with fire codes and the mixing of incompatible wastes is prohibited.

6 MCAR § 4.9316 is reasonable because the protection of public health and the environment requires the proper design, maintenance, and operation of those facilities handling hazardous waste. The precautions necessary to prevent the inadvertent release of hazardous waste to the environment require proper design (tank material which is structurally sound and compatible with the waste), proper maintenance (weekly inspections to check for deterioration and malfunctioning equipment), and proper operating conditions (the separation of incompatible wastes, the rendering of ignitable and reactive wastes nonhazardous). The requirement for a containment system which is impervious and nonreactive with the waste is reasonable because, if a leak should occur, any impact on the environment or human health is minimized by keeping the waste in a confined area and as an easily recoverable material. Preventing incompatible wastes from being mixed and controlling the manner in which ignitable wastes are stored not only protects the environment and public health from air emissions due to explosions, fires, and other damage

causing reactions, but also prevents the leakage of hazardous waste onto the land or into the waters of the state.

6 MCAR § 4.9317

Rule 6 MCAR § 4.9317 contains the design and operating standards for surface impoundments which are used to store, treat or dispose of hazardous waste. Surface impoundments are designed to hold liquid wastes and wastes containing free liquids. Leakage to ground water generally poses the most serious threat to human health and the environment from impoundments, but air emissions from volatile wastes and surface water contamination as a result of overtopping the impoundment or dike failure can also be serious problems. Therefore, in utilizing surface impoundments as a treatment, storage or disposal facility, precautions must be taken to prevent the leakage of hazardous waste through the liner(s) of the impoundment into the surrounding soil and waters and the dispersal of hazardous waste through air emissions. The design and operating standards are of two types: the first set of standards requires sound operating practices, the second set of standards establish environmentally protective design and construction features. The rule is based on the corresponding EPA regulations on surface impoundments, 40 C.F.R. §§ 264.220 - 264.230. However, some significant changes to the federal regulations have been made; these will be pointed out in the following paragraphs.

6 MCAR § 4.9317 A. states that the rule applies to owners and operators of surface impoundments used to store, treat, or dispose of hazardous waste unless otherwise exempted in 6 MCAR § 4.9280 and is identical to 40 C.F.R. § 264.220. No distinction is made between new and existing impoundments. The Agency believes that existing facilities should not be "grandfathered" in because such facilities pose more of an environmental risk than new, well-designed facilities.

Paragraph B. sets forth the locational requirements for surface impoundments and requires that information regarding the facility's hydrogeologic setting be provided by the owner or operator. This section does not have a counterpart in the federal regulations. However, Minnesota's hydrogeology is sufficiently complex that such standards are necessary to avoid constructing a surface impoundment in an environmentally unsafe location. Detailed information about the hydrogeologic setting is necessary to determine its sensitivity to potential leakage or accidental discharges from a facility and to lay the foundation for predicting the feasibility and effectiveness of corrective action should ground water be contaminated by the facility.

Subparagraph B.1. prohibits locating surface impoundments in areas characterized by surficial karst features. "Surficial karst features are defined in 6 MCAR § 4.9100 as "features formed in soluble bedrock and which have surficial expressions or are

shallow enough to potentially affect the integrity of an overlying facility." Areas where surficial karst features are present are subject to surface collapse and sink holes caused by dissolution of the underlying rock. In addition, because of the underground solution cavities which are present in karst areas, monitoring and corrective action would be extremely difficult. Therefore, it is reasonable to prohibit the location of surface impoundments in such areas because of the potential for liner failure due to collapse caused by dissolution of the underlying rock.

Subparagraph B.2. requires the owner or operator of a proposed or existing facility to submit a hydrogeologic report about the site of a surface impoundment. The purpose of such a report is to evaluate the facility's potential effects on subsoils, surface water, and ground water. The proposed rule lists the type of information necessary in the report. Although the federal regulations do not have a corresponding requirement, the Agency believes it is important to know the potential effects which may result from the construction and operation of a facility at a specific location. Before a permit can be issued, the applicant must assure the Agency that successful corrective action can be conducted if necessary. This can only be accomplished by requiring extensive hydrogeologic data on the site to be submitted prior to permit issuance. Without a good understanding of the hydrogeology of the site, no one involved (the owner or operator,

the Agency or the public) in the permitting process will have the information necessary to make sound decisions.

Subparagraph B.3. requires that a surface impoundment be located so that its entire containment system (i.e., dikes and liners) is entirely above the seasonal high water table. This provision differs somewhat from the corresponding federal regulations. 40 C.F.R. § 264.222 requires only double-lined surface impoundments to be located entirely above the seasonal high water table. As discussed below, 6 MCAR § 4.9317 requires all impoundments in Minnesota to have a double liner system. Therefore, this difference should have no impact.

Paragraph C. establishes the design and operating requirements for surface impoundments and corresponds to the provisions of 40 C.F.R. § 264.221. The goal of these requirements is to assure that an impoundment is designed and operated to prevent the migration of hazardous constituents from the impoundment during its active life. The ground water protection standards established in 6 MCAR § 4.9297 are intended to result in detection, evaluation and, if necessary, correction of ground water contamination. The design and operating standards established in this rule and in the corresponding rules on waste piles, land treatment units and landfills, are intended to minimize the possibility of contamination. Thus, these two sets of standards are complementary, not duplicative. The design and operating requirements established in this paragraph are performance standards.

Therefore, the owner or operator must decide how the standards will be met and submit an appropriate proposal in the permit application. Subparagraph C.6. requires that the Agency permit issued for the facility include the design and operating practices necessary to meet the performance standards of paragraph C. This approach allows flexibility in the design of the facility and the operating practices so long as the standards are met. There are four major design and operating requirements established in 6 MCAR § 4.9317 C.: 1) a double liner and a leak detection, collection and removal system; 2) the prevention of overtopping; 3) measures to ensure the structural stability of the dikes; and 4) emergency emptying procedures. Each of these items contributes to the protection of surface and ground water by minimizing the likelihood that wastes will migrate from the impoundment. In addition 6 MCAR § 4.9317 requires that a plan be submitted to address the treatment and disposal of leachate which may be removed from the impoundment.

Subparagraph C.1. provides that all surface impoundments must have a double liner system and a leak detection system. The liner system must consist of two liners and be designed to prevent the migration of waste out of the impoundment during the active life (including closure) of the facility. This requirement differs from the federal regulation which permits the use of single liners for surface impoundments. The Agency does not believe that a single liner provides adequate protection for the ground water.

Without the second liner and the leak detection system between the liners, a liner leak would only be detected when the ground water monitoring program determines that ground water is contaminated. At that time the owner or operator would have to implement the corrective action program for the ground water. Corrective action should be considered as the last step in ground water protection. A double liner and leak detection system will provide a warning that the liner closest to the waste is leaking before the ground water becomes contaminated. The Agency believes that it is more reasonable to provide safeguards, such as double liners and leak detection, which give the owner warning of the malfunctioning of the containment devices, than merely to respond to such malfunctions only after the ground water is contaminated and the problem has spread to the point where difficult and expensive solutions are necessary.

40 C.F.R. § 264.221 provides an exemption from the ground water monitoring requirements for those surface impoundments which have double liners and leak detection systems. The Agency's proposed rules do not allow any exemptions from the ground water monitoring requirements (contained in 6 MCAR § 4.9297) for double-lined systems. While having a double liner and leak detection system should, in most cases, provide indications of liner failure before a ground water contamination problem develops, there may be cases where both liners in the liner system have been breached although no leak has been detected. Therefore, the Agency does not

believe it is reasonable to neglect monitoring the ground water and rely only on the leak detection system to uncover problems with the liner system. The proposed rule requires ground water monitoring even though double liners and leak detection systems are required for surface impoundments.

The federal regulations also allow an exemption from the liner requirements if the owner or operator can demonstrate that alternate design and operating practices will prevent the migration of hazardous constituents from the facility. Because of Minnesota's hydrologic setting, it is unlikely that such a demonstration can be made. In the unlikely event that such a facility is proposed, the owner or operator can use the MPCA variance procedures to apply for a variance from the liner requirements. It is more reasonable to use the general provisions than to incorporate a variance option into each rule.

The liners are to be designed to prevent migration of waste constituents from the impoundment during the facility's active life. This time period requirement is identical to the corresponding EPA provision. The Agency adopted the EPA provision because at closure other provisions of the rule serve to make the role of the liner system less important or totally unimportant. The owner or operator has the option of closing his facility by either removing all waste, liners and other contaminated containment system components, and contaminated subsoils, or by leaving



the waste in place, solidifying and stabilizing the waste, and covering it with an impermeable cap. Under the first option, the liner obviously is no longer needed. Under the second option, the cap will minimize the amount of liquid which will contact the waste and thus minimize the amount of leachate formed. The liner, while still in place, will not play the primary role in the minimization of leachate migrating from the site. Therefore, it is reasonable to adopt the EPA requirement that the liner be designed to function through the time of facility closure.

The method of anticipated closure of an impoundment will determine the type of liners that may be used. For impoundments that are to be closed with waste left in-place, at least one of the liners must be constructed of materials that prevent waste constituents from penetrating the liner. This essentially means that one liner must be constructed of synthetic materials. The other liner of such a system can be constructed of materials that allow waste constituents to migrate into the liner but do not allow wastes to migrate out of the liner into surrounding soil. For an impoundment that will be closed by removal of all waste, liners and other contaminated containment system components, and contaminated subsoils, each liner may be constructed of penetrable materials such as clay. In either case, each liner must be designed and constructed to prevent the migration of waste constituents to the underlying subsoil or drainage layer. This

requirement will ensure that if the top liner is flawed, an effective second liner which has been designed to prevent waste migration for the active life of the facility will be in-place.

The remaining performance standards for liners apply to all liners and are identical to the federal regulation. These standards will ensure that liners will stand up to stresses that will be encountered during construction and operation. Such stresses include pressure gradients, hydrogeologic forces, climatic conditions, stresses due to operation of construction equipment, and effects of contact with waste. The requirements include a base for the liner which will withstand pressure gradients so that the liner is not damaged due to settling, compression, or uplift. All soils that may be contacted by waste are required to be covered by the liner system. These requirements are discussed in the EPA background documents on surface impoundments and land disposal facilities listed in Part VIII.

Subparagraph C.2. requires a surface impoundment to be designed, constructed, maintained, and operated to prevent overtopping resulting from normal or abnormal operations. This provision is identical to 40 C.F.R. § 264.221(c). The importance of preventing overtopping is obvious. Except for hazardous waste constituents which leave an impoundment by leaks through the impoundment's liner system, the only other route of migration is over the dikes. This route of escape can be eliminated by careful

design and planning; therefore it is reasonable to require that it be eliminated.

Subparagraph C.3. requires that the dikes of a surface impoundment be designed, constructed, and maintained with sufficient structural integrity to prevent massive failure of the dikes. This provision is essentially identical to 40 C.F.R. § 264.221(d) although a definition of massive failure has been added. The dikes must be designed so that they will not fail even if the liner system fails to prevent leakage through the sidewalls. The liner is not assumed to be non-leaking for the purposes of making such a demonstration.

Subparagraph C.4. requires the owner or operator of a surface impoundment to have an emergency system for emptying the wastes from an impoundment. This provision has no specific counterpart in the federal regulations. However, such a system is implicitly required by 40 C.F.R. § 264.227. Normally this provision would be fulfilled by the use of an emergency impoundment or tank. It is reasonable to provide such an emergency backup system so that there is some place available for the wastes in the impoundment should a leak be detected. It has been placed in the design and operating requirements because it must be addressed at the time of permit issuance (specifically in the contingency plan) rather than when needed in an emergency situation. The provision alerts the owner or operator of the fact that he may need to perform extensive construction activities in addition to those required for the main surface impoundment.

Paragraph D. of rule 6 MCAR § 4.9317 is taken from 40 C.F.R. § 264.222(b) and sets forth the options available to an owner or operator if liquids are detected in the leak detection, collection, and removal system. The options are to: 1) remove accumulated liquids, repair the leaking liner, and obtain a certification that the leak has been repaired; or 2) remove accumulated liquids from the leak detection system and begin increased ground water monitoring as specified in 6 MCAR § 4.9297 K.5. Under the second option, the owner or operator must also continue to remove accumulated liquids from the leak detection, collection, and removal system during the active life and post-closure care period of the impoundment. This second option will be available only in cases of minor leaks because a major leak will result in a noticeable lowering of the liquid level in the impoundment and will necessitate removing the impoundment from service in accordance with paragraph F. Accumulation of liquid in the system is an indication that the liner system is not functioning as designed. The liner system is the main defense against migration of waste constituents through the bottom of the impoundment. Therefore, all efforts must be made to ensure the integrity of the liner system.

The first response option to the accumulation of liquid in a detection system includes repair of any leaking liner. This is obviously a reasonable response since repair would result in the liner meeting all the specifications in the original permit.

The second response option, consisting of removing all accumulated liquid (for the duration of the active life and post-closure care period) and intensifying ground water monitoring is reasonable for minor leaks of the top liner. In this case the bottom liner will prevent migration of liquids through the impoundment bottom and will aid in the collection of liquids which pass through the top liner. Since the bottom liner will have been designed to prevent waste constituents from passing through it during the active life of the impoundment, it will provide protection of the ground water.

Paragraph E. establishes the requirements for monitoring and inspection of a surface impoundment. This section is based on the provisions of 40 C.F.R. § 264.226. Liners and covers must be inspected during and immediately after construction to detect and remedy any defects which could result in increases of liquids passing through the liners or covers. Liner inspection is very important. Properly constructed or installed liners should prevent any migration of wastes for many years. Improperly constructed liners, however, can result in migration of wastes almost immediately after they are first placed in the unit. 6 MCAR § 4.9317 E. also requires inspections of the impoundment weekly and after storms to detect any conditions which may indicate that waste constituents have left the impoundment or that the potential exists for such an event. These inspections are not very expensive or time consuming; thus such inspections of these important features are reasonable. These inspection provisions

are important to ensure that the impoundment is maintained in a condition necessary to function as designed.

Subparagraphs E.3. and E.4. require a qualified engineer to certify dike integrity and that liners and leak detection, collection and removal systems meet design specifications prior to permit issuance, after periods during which the impoundment was out of service for at least six months, and after activities (such as dredging) which may affect the condition of these impoundment components. The dike certification requirement is identical to the corresponding federal regulation and is necessary to ensure that the dikes will function as designed. The recertification is necessary to assure that no changes to the dike, such as erosion during the shut-down period, have impaired its structural integrity. The six month period is based on EPA's judgment that significant changes may occur during a period of that length and is discussed at 47 F.R. 32319 - 32320 (July 26, 1982). The certification of the liner and leak detection, collection, and removal systems has been added to the proposed rules because it is necessary to be certain that these systems also function as designed. During the period that the impoundment is not in service, as much damage to the liner may occur as to the dikes. It would therefore be irresponsible not to reinspect the liner before placing hazardous waste into the impoundment.

Paragraph F. addresses when a surface impoundment must be removed from service, how the impoundment must be removed from

service, and what happens if the impoundment is not returned to service. With the exception of the minor changes discussed below, this section is identical to 40 C.F.R. § 264.227. Obviously, requirements which prescribe the responses to emergency conditions are necessary to minimize potential hazards to human health or the environment. The emergency conditions to which responses are required include drops in the liquid level not known to be caused by flows into or out of the impoundment and leaks through the dikes. The federal regulation includes the word "suddenly" in the provision that addresses a drop in an impoundment. Non-sudden drops can also be an indication of liner failure and should also be a cause for removing an impoundment from service. Since these conditions indicate a migration of waste constituents from the facility, either through the bottom or through the dikes, it is reasonable to require that the impoundment be removed from service until these conditions are eliminated.

Subparagraph F.2. sets forth the steps to be taken when it has been determined that a surface impoundment must be removed from service. This subparagraph is slightly different from the corresponding federal provision in that it provides that the impoundment be emptied if the leak cannot be stopped immediately by other means. The word "immediately" was added because other language in this provision requires that the leak be stopped immediately. The Agency believes that the rules should make clear

that emptying the impoundment is a necessary emergency response and must be performed when other required measures fail to prevent migration of waste constituents from the impoundment. Also included in this section is a requirement that is not in the federal regulation that the owner or operator provide a written report to the Agency regarding any situation which necessitates removal from service of the impoundment. This report must present information about the problem and the efforts that were taken to remedy the problem. This is a reasonable requirement because the Agency must be fully apprised of situations which have resulted in or may result in migration of hazardous waste constituents from an impoundment.

Subparagraph F.3. requires that the contingency plan for the impoundment include procedures for removing an impoundment from service. This provision is identical to 40 C.F.R. § 264.277(c). Subparagraph F.4. establishes the requirements for returning a surface impoundment to service after it has been removed from service. These provisions are the same as those in the EPA regulation and require that the dike's structural integrity be recertified and the liner repaired if necessary. If the impoundment is not returned to service, subparagraph F.5. requires that the impoundment be closed. This provision is identical to that in EPA's regulation and is necessary to assure that failed impoundments are not left with hazardous waste in them for an unnecessary period of time.



Paragraph G. establishes the requirements for closure and post-closure care of a surface impoundment. With one exception, which is discussed below, the requirements of this paragraph are the same as those of 40 C.F.R. § 264.228. This paragraph provides two basic closure options, depending on the type of liners installed. The first alternative is to remove all waste residues, contaminated containment system components, contaminated subsoils, and structures and equipment contaminated with waste and leachate. This option, since it includes removal of the liner system if contaminated, is appropriate for all surface impoundments regardless of liner type. The second alternative is to leave the waste in place, eliminate free liquids, stabilize the remaining waste to a bearing capacity sufficient to support final cover, provide a final cover and conduct post-closure monitoring and maintenance. This option is limited to surface impoundments that have at least one liner that does not allow penetration of waste constituents into the liner. Liners that allow wastes to migrate into them may, after closure, allow waste constituents to pass through them, since they are only required to be designed to prevent such pass-through during the active life and closure period of the facility. Therefore, the distinction between the two closure options based on liner type is necessary to minimize the potential migration of hazardous waste constituents from the impoundment after closure.

The closure option of removal of wastes and contaminated structures, equipment and subsoils ensures that no potential for waste constituent migration from the facility will exist after closure. If this option is chosen, ground water monitoring can be stopped after it is demonstrated that all contamination has been removed. This is reasonable because the facility has ceased to be a potential source of ground water contamination. The second closure option, with wastes remaining in-place, is also a reasonable approach when steps are taken to ensure that leachate formation and migration from the impoundment are minimized.

Subparagraphs G.3. and G.4. apply to surface impoundments which do not have liner systems meeting the liner requirements of 6 MCAR § 4.9317 C.1. These would be existing impoundments which become regulated by these rules but do not qualify for a permit. If the owner or operator of this type of surface impoundment plans to close the impoundment by removal of the wastes and contaminated structures, equipment and subsoils, he must include in his closure plan both the measures necessary to perform this closure option and a contingent closure plan to perform closure with the wastes left in-place. He must also prepare a contingent post-closure care plan. This is a reasonable approach since it is uncertain whether the nonconforming liner system is sufficient to prevent contamination of subsoils; therefore the owner or operator must be prepared to provide adequate closure if he is unable to remove all contaminated subsoils as planned.

Subparagraph G.4. requires that the owner or operator of an impoundment closing pursuant to subparagraph G.3. include costs for the contingent closure and post-closure care plans as well as for the intended closure plan in his cost estimate for closure and post-closure care. The federal regulation requires only that the estimate address only the contingent closure and post-closure care plans. Since the owner or operator must first perform the requirements of his intended closure plan and only implement the contingent plans if he discovers that he cannot remove all contaminated subsoil, it is not reasonable to omit the contingent plan costs from the closure cost estimate. Therefore the proposed rules require that this cost be included for purposes of determining the amount of financial assurance necessary for closure activities.

Subparagraph G.5. establishes the procedure to be followed if liquids are detected in the leak detection, collection and removal system during the post-closure care period. The owner or operator must notify the Agency within seven days of the detection, implement increased ground water monitoring in accordance with 6 MCAR § 4.9297 K.5. and remove accumulated liquids from the leak detection, collection and removal system. This requirement is a reasonable response to a leak discovered after closure of the impoundment. Since a final cover has been applied to the facility, it would be unreasonable to require that

the leaking liner be repaired. After closure the cover is viewed as the major liquid management feature of the impoundment and its integrity should not be jeopardized for the sake of repairing a less important component of the liquids management system. However, since one of the liners of the double liner system is obviously no longer functioning as designed, it is reasonable to increase the frequency of ground water monitoring.

Paragraph H. is identical to 40 C.F.R. § 264.229 and prohibits the placement of ignitable or reactive wastes into a surface impoundment unless specified conditions are met. Paragraph I. requires that incompatible wastes or incompatible wastes and materials not be placed into the same impoundment unless precautions are taken to prevent adverse effects and is identical to 40 C.F.R. § 264.230. The rationale for these provisions is discussed in the EPA documents on ignitable, reactive and incompatible wastes listed in Part VIII.

6 MCAR § 4.9318

Rule 6 MCAR § 4.9318 contains the design and operating standards which must be met by an owner or operator of a facility which stores or treats hazardous waste in piles. Waste piles may not be used to intentionally dispose of hazardous waste. Piles used for disposal instead of storage or treatment are regulated as landfills. This rule is based on the provisions of 40 C.F.R. §§ 264.250 - 264.258.

Using waste piles as a method for hazardous waste treatment and storage provides a mechanism for the introduction of potentially harmful hazardous waste components into the environment. The potential hazards from waste piles include wind dispersal of the waste, leachate formation and run-off, and fires and explosions from mixing incompatible wastes.

Paragraph A. provides that the rule applies to owners and operators of waste piles used to treat or store hazardous waste unless they are otherwise exempted by 6 MCAR § 4.9280 or by one of the exemptions allowed in this paragraph.

Dry waste piles that are located inside or under a structure that provides protection from precipitation, run-on and wind dispersal are exempted from portions of this rule. For example, the owner or operator need not comply with the prohibition on the location of a pile in an area characterized by karst features. This requirement is meant to prevent the establishment of a pile in an area that may cause a failure of the pile's liquids management features. If no leachate can be formed, there is no need to prohibit such a location. Similarly the owner or operator is exempt from the hydrogeologic report requirement of subparagraph B.2. because one purpose of such a report is to predict the fate of leachate which migrates from the pile and from the requirement to monitor ground water, because leachate which could enter the ground water will not be generated.

Paragraph B. sets forth the locational requirement for a waste pile and for the study of a site's hydrogeologic suitability. These locational requirements are the same as those for a surface impoundment and are discussed in connection with 6 MCAR § 4.9317 B. The rationale for these requirements is also the same. Therefore, this provision will not be discussed again here.

Paragraph C. establishes the design and operating requirements for a waste pile and corresponds to the provisions of 40 C.F.R. § 264.251. These requirements are necessary to assure that a waste pile is designed and operated to prevent the migration of hazardous constituents from the pile during its active life. The design and operating requirements established in this paragraph are performance standards. Therefore the owner or operator must decide how the standards will be met and submit his proposal in his permit application. The Agency permit issued for the facility must include the design and operating practices necessary to meet the performance standards. This allows flexibility in the design of the facility and the operating practices as long as the standards are met.

There are six major design and operating requirements established by 6 MCAR § 4.9318 C.: 1) a liner; 2) a leachate collection and removal system; 3) a run-on control system;

4) a run-off management system; 5) emergency emptying procedures; and 6) wind dispersal control measures. Each of these items contributes to the protection of surface and ground water by minimizing the likelihood of wastes migrating from the pile.

Subparagraphs C.1. and C.2. provide that waste piles must have liners and leachate collection and removal systems above the liners. These subparagraphs are identical to 40 C.F.R.

§ 264.251(a). The Agency is relying on the background documents on waste piles and on land disposal facilities prepared by EPA and listed in Part VIII. as support for these requirements. The liner must be designed, constructed, and installed to prevent any migration of wastes out of the pile and into the adjacent soils during the active life including the closure period of the facility. To reduce pressure head on the liner, the rule requires that the system be designed, constructed, maintained and operated so that the leachate depth on the liner never exceeds one foot.

The leachate collection system must be constructed of materials which are chemically resistant to the wastes managed in the pile and to the leachate which is expected to be generated and must be of sufficient strength and thickness to prevent collapse under the pressures exerted by overlying wastes, waste cover materials, and by any equipment used at the pile. The system must be designed and operated to function without clogging through the scheduled closure of the pile. These requirements are merely common-sense provisions and are necessary to ensure that

the leachate collection and removal system can perform its intended function through the lifetime of the pile.

Unlike the rules which cover surface impoundments and landfills, double liner systems are not required for waste piles. Waste piles do not pose as great a potential for leachate migration from the pile as do surface impoundments or landfills. Since a pile would normally be above-ground and is, by definition, an accumulation of solid, nonflowing hazardous waste, it is quite easy to ensure that standing liquids do not accumulate on the liner. Collection of leachate and run-off from the pile is relatively simple. Even if a single liner failed, the amount of leachate that could migrate through the liner would be relatively small, and the head of liquids which would provide the driving force for subsoil penetration would be minimal. For these reasons, it was determined that double liners for waste piles could not be justified.

EPA provides an exemption from the ground water monitoring requirements for those waste piles which have double liners and leak detection systems. The Agency's proposed rules do not provide any exemptions from the ground water monitoring requirements (contained in 6 MCAR § 4.9297) for double-lined systems. While having a double liner and leak detection system should, in most cases, provide indications of liner failure before a ground water contamination problem develops, there may be cases



where both liners have been breached although no leak has been detected. The Agency believes it is preferable not to rely only on the leak detection system to uncover problems with the liner system. Therefore, the proposed rule requires ground water monitoring for double-lined waste piles, albeit at reduced frequencies and for a reduced list of parameters compared to the requirements for single-lined piles.

The federal regulations also allow an exemption from the liner and leachate collection and removal system requirements if the owner or operator can demonstrate that alternative design and operating practices will prevent the migration of hazardous constituents from the facility. Because of Minnesota's hydrologic setting it is unlikely that such a demonstration can be made. In the unlikely event that such a facility is proposed, the proposer can use the general Agency variance procedures to apply for a variance from these requirements. Therefore the Agency has not included a corresponding provision in these rules.

Subparagraphs C.3.-C.5. contain specific requirements regarding run-on and run-off. Except as noted below the requirements are identical to the provisions of 40 C.F.R. § 264.251(c) - (e). These provisions require that a run-on control system be designed, constructed, operated and maintained to prevent flow onto the active portion of the pile during the peak discharge from at least a 100-year storm. This provision is more stringent than the federal regulation which has a design standard of a 25-year storm.

As discussed at 47 F.R. 32323 (July 26, 1982), the EPA is concerned that in some situations designing to accommodate only a 25-year storm is inadequate. By decreasing the frequency of the storm event for which a facility must be designed, the probability that the design capacity of the system will be exceeded during the active life of the facility is decreased. For example, a waste pile with a 20-year active life which is designed to prevent run-on from a 25-year storm has greater than a 50-percent chance that its design capacity will be exceeded one or more times during its active life. 7/ In contrast, if the same waste pile is designed to prevent run-on from a 100-year storm, there is less than a 20-percent chance that its design capacity will be exceeded one or more times during its active life. The increase in protection to the waste pile from run-on will increase the cost of run-on protection. EPA estimates that use of a 25-year storm instead of a 100-year storm may increase the cost of run-on protection from 7 to 25 percent. See 47 F.R. 32323 (July 26, 1982). Run-on from a storm will increase the potential for leachate generation which in turn creates a greater threat to ground and surface water. Water is a valuable resource that is difficult and expensive to clean once it becomes contaminated. To provide sufficient protection to the valuable resource the Agency believes it is reasonable to require this design standard.

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7/ The supporting calculations are set forth in Appendix B. See also Hydrology Guide to Minnesota which is listed in Part VIII., for further support for the use of a 100-year storm requirement instead of the 25-year storm.

Subparagraph C.4. requires that a run-off management system be designed, constructed, operated and maintained, to collect and control at least the water volume resulting from a 24-hour, 100-year storm. This provision is also more stringent than the federal standard of a 25-year storm. The rationale for this requirement is the same as that for requiring protection from run-on from 100-year storms in lieu of 25-year storms.

Subparagraph C.5. requires that collection and holding facilities which are parts of the run-on or run-off management system be emptied or managed expeditiously after storms to maintain system capacities. The final design and operating standard of paragraph C. addresses the control of wind dispersal of particulate matter from the pile. This requirement is identical to the corresponding federal requirement and is necessary not only to control the dispersal of hazardous particulates in the air but also to prevent surface water contamination due to entry of particulate matter.

Paragraph D. of 6 MCAR § 4.9318 provides that waste piles with double liner systems are subject to less intensive ground water monitoring requirements than piles with single liners. Both the frequency of monitoring and the number of monitoring parameters may be reduced. In a double-lined waste pile, the liner system will incorporate a leak detection system which will be monitored so that a leak of the upper liner can be promptly detected. Since the bottom liner and leak detection system act as

a backup to the top liner, it is reasonable to reduce ground water monitoring requirements for a double-lined system. However, the Agency believes it is preferable not to totally eliminate ground water monitoring requirements for double-lined systems. Regardless of the care taken in designing, constructing, and maintaining leak detection systems, leaks may go undetected. If the bottom liner should also fail, contaminants could reach the ground water. Therefore, it is reasonable to require a nominal ground water monitoring system even for a double-lined facility.

The leak detection and removal system required for a double-lined facility must be designed, constructed, maintained and operated to detect, collect and remove any migration of liquids into the space between the liners. Thus, should the top liner fail, this system will be able to continue operation as a leachate collection and removal system. One of the options an owner or operator has if liquids are detected between the liners is to continue operation of the pile as if it just had a single liner. Therefore it is reasonable to require that the leak detection, collection and removal system can function as a leachate collection and removal system does for a single-lined pile.

Paragraph E. is identical to 40 C.F.R. § 264.253 and exempts waste piles with inspectable lines from all the ground water monitoring requirements of 6 MCAR § 4.9297. To qualify for the exemption, the waste pile must be underlain with a liner meeting all requirements of paragraph C. and which is inspected

periodically for deterioration, cracks or other conditions that may result in leaks. The liner must also be of sufficient strength and thickness to prevent damage caused by equipment which is used to remove the waste in order to inspect the liner. The frequency of inspection will be based on the potential for the liner to crack or otherwise deteriorate under the conditions of operation. This exemption relies on inspections of the liner to assure that the liner is intact and is not allowing leachate to migrate through the liner. This inspection procedure obviates any need to monitor ground water. This exemption is discussed in greater detail at 47 F.R. 32323 (July 26, 1983). If conditions are noted during an inspection which indicate that leakage may be occurring or that a leak may develop, the owner or operator must respond accordingly. He must repair the condition of concern and obtain a certification from a qualified engineer that the liner has been repaired and leakage will not occur. He may also choose to stop inspecting the liner if he implements a ground water monitoring program.

Paragraph F. establishes requirements for inspections of liner systems before and after installation and is based on the provisions of 40 C.F.R. § 264.254. This section is similar to the corresponding provisions in 6 MCAR § 4.9317, surface impoundments. It requires inspections of liners during and immediately after construction to detect (and remedy) any defects which could result in increases of liquids passing through the liners. It also

requires inspections of the waste pile weekly and after storms to detect any conditions which may indicate that waste constituents have left the pile or that the potential exists for such an event. These requirements were discussed in more detail with respect to surface impoundments. See pp. 197-198, supra. Therefore, that discussion will not be repeated here.

The requirements for closure and post-closure care of a waste pile are contained in paragraph G. With the exception noted below this paragraph is the same as 40 C.F.R. § 264.258. A waste pile must be closed by removal (and adequate disposal) of wastes, waste residues, contaminated containment system components and contaminated subsoils. No option for closure with wastes in-place exists. If an owner or operator wishes to close a pile with wastes in-place, he is really operating a landfill, and must comply with the landfill requirements (6 MCAR § 4.9320) which address the long-term minimization of migration of waste constituents from the facility. The waste pile requirements are only intended to prevent such migration during the active life of this pile, after which time the potential for migration has been eliminated due to waste removal. Post-closure care for a waste pile will normally not be necessary because the pile will not exist after closure. However, subparagraph G.2. provides that, if all contaminated subsoils cannot be removed at closure, the owner or operator must then perform closure and post-closure care according to the landfill closure requirements.

This section differs slightly from the federal regulations in that the cost estimate for closure and post-closure care must include both the normal costs of waste removal and the costs for closing according to the landfill rule and providing post-closure care. The federal regulation requires that this cost estimate include only costs for closing as a landfill and post-closure care. Since the owner or operator must, in any event, first attempt removal of wastes and contaminated materials, it is preferable to include the costs for these actions as well.

Paragraph H. prohibits the placement of ignitable or reactive wastes in a waste pile unless specified conditions are met. Paragraph I. requires that incompatible wastes or incompatible wastes and materials not be placed into the same waste pile unless precautions are taken to prevent adverse effects. These paragraphs are identical to the provisions of 40 C.F.R. §§ 264.256 and 264.257 and, therefore, will not be discussed here.

6 MCAR § 4.9319

Rule 6 MCAR § 4.9319 establishes the design and operating requirements for land treatment units. The provisions of this rule are based on the EPA regulations for land treatment units, 40 C.F.R. §§ 264.270 - 264.282. The Agency is relying on the EPA background documents on land treatment units and on land disposal facilities listed in Part VIII. as support for this rule. Any differences between the provisions of the Agency's pro-

posed rule and the corresponding EPA regulations are noted below. Land treatment involves the application of waste on the soil surface or the incorporation of waste into the upper layers of the soil in order to degrade, transform or immobilize hazardous constituents present in hazardous waste. Unlike surface impoundments or landfills which rely on impervious liners, land treatment relies on the dynamic physical, chemical and biological processes occurring in the soil to break down or immobilize the hazardous constituents.

Because land treatment depends upon soil and waste interactions to break down or immobilize the hazardous constituents, it is especially important that the units be carefully operated. The key operational aspects include maintenance of proper soil pH to optimize microbial action and metal immobilization, careful management of waste application rates to prevent exceeding the soil's treatment capacity, and control of surface water run-off to prevent untreated hazardous waste from leaving the facility. The regulatory goal is to minimize the uncontrolled migration of hazardous constituents into the environment. This is accomplished by using a defined layer of the surface and subsurface soils to treat the hazardous constituents in the leachate passing through the system. This treatment process achieves the same general objectives as the liquid management strategy used at other types of land disposal facilities in that it acts to prevent hazardous constituents from entering the environment.



Paragraph A. is identical to 40 C.F.R. § 264.270 and provides that the provisions of this rule apply to owners and operators of new and existing land treatment units.

The requirements for a treatment program are established in Paragraph B. The provisions of paragraph B. are the same as those of 40 C.F.R. § 264.271. The rationale is discussed in detail in the background documents on land treatment prepared by EPA. There are three principal elements of the treatment program that will be specified in the facility permit. First, the permit will specify the wastes that may be handled at the facility. Second, the land treatment program will include a set of design and operating measures that are necessary to maximize degradation, transformation and immobilization of hazardous waste constituents. Third, the treatment program must include an unsaturated zone monitoring plan.

The maximum treatment zone depth and the minimum separation to ground water are also specified in this paragraph. The five foot treatment zone depth corresponds to the depth of maximum microbial activity, oxygen, and organic matter concentration. Oxygen levels and organic matter decrease with soil depth so that microbial activity, which depends on a food and oxygen supply, also decreases with soil depth. Below a depth of five feet, the microbial population may be unable to significantly treat waste materials. Also, the conditions for the adsorption and complexation of metals are less than optimum where oxygen and organic matter are limited.

The required three foot separation between the bottom of the treatment zone and the seasonal high water table is necessary to provide a buffer area to accommodate unforeseen seasonal water table fluctuations and to allow for the installation and use of unsaturated zone monitoring devices. The unsaturated zone monitoring program requires that soil pore liquid be sampled from the area below the treatment zone but above the water table. A three foot separation is reasonable to provide the necessary assurance that the monitoring devices are actually sampling soil and soil pore liquid characteristics and are not affected by ground water, and also to provide an additional attenuation zone in the event that constituents have left the treatment zone.

The first step in the establishment of a land treatment program is to conduct a treatment demonstration. Paragraph C. establishes the requirements for such a demonstration. A demonstration is the most reliable method to determine what waste material can be treated, degraded or immobilized in the soil and is also used to set the waste management practices that will be incorporated into the permit so that no adverse health or environmental effects will occur. The demonstration must occur before the facility can be operated. The requirements of this paragraph are taken from 40 C.F.R. § 264.272.

Because some waste materials have been land treated for many years and some have never been land treated, a great deal of variability exists regarding the amount and quality of the

research data available. In some cases, most of the necessary information must be generated for the demonstration because there is very little previous research data available. Other waste materials have been extensively researched and, in the case of existing facilities, may have operational data which proves the effectiveness of land treatment. Because such a wide range exists, the rule provides several options for conducting the demonstration. A literature review and a short field test may be required for some waste demonstrations whereas other wastes must be extensively tested in the laboratory before field tests can be safely conducted.

The rule requires that all demonstrations include field tests. This is more stringent than the federal regulation which only includes field testing as an option. Because so much variability in the physical conditions of land treatment units exists, and because the waste is placed directly on or into the soils with no liner between the waste and ground water, it is essential to require a field test even if extensive data already exists. Field tests will typically be conducted on a small scale or under carefully controlled conditions, so there will be a much lower potential for adverse human health or environmental effects. It is therefore reasonable to require a low risk demonstration prior to the implementation of the actual full scale project.

The design and operating requirements for a land treatment unit are established in 6 MCAR § 4.9319 D. The most reasonable approach is to provide a general framework for unit design and operation which will provide maximum flexibility. Because of the great variability which exists in waste materials and soil conditions, it is impossible to specify in the rule the details of the actual design and operation of the unit. The principal design and management measures are those that are required as part of the land treatment program and are established as a result of the demonstration. In addition, there are other general design and operating requirements applicable to land treatment units that are analogous to those required at other types of land disposal units. For example, the rule requires that the facility have effective run-on and run-off control. Except for the requirements of subparagraphs D.3. and D.4., the provisions of paragraph D. are based on the requirements of 40 C.F.R. § 262.273.

Subparagraphs D.2.-D.6., address run-off management requirements for land treatment units and require that run-off from the treatment zone be minimized. Subparagraph D.4. requires that containment structures be available to collect the run-off resulting from a 24 hour, 100 year-storm. Subparagraph D.6. requires that the containment structures be expeditiously emptied so that they are always operational. Subparagraph D.3. addresses

the prevention of flow onto the treatment zone during peak discharges from a 100-year storm. Uncontrolled applications of water may increase the erosion losses of hazardous constituents and may also increase the leaching of hazardous constituents from the treatment zone. A certain amount of moisture from rainfall is inevitable and is necessary for maintaining microbial activity and vegetation. However, it is reasonable to restrict the amount of moisture to that which cannot be avoided, and to divert as much water as possible in order to maintain more control over treatment zone conditions. The rationale for requiring management for a 100-year storm instead of for a 25-year storm as required in the federal regulation is discussed in connection with 6 MCAR § 4.9318 C.3., pp. 209-210, supra., waste piles, and will not be repeated here.

Subparagraph D.7. requires that wind dispersal from the land treatment unit be controlled to prevent the loss of hazardous constituents from the treatment zone.

Paragraph E. of 6 MCAR § 4.9319 addresses food chain crop production on a land treatment unit and corresponds to 40 C.F.R. § 264.276. The major concern with food chain crop production is the potential for toxic substances to adhere to, or be taken up by, the plant and in turn be consumed by humans or animals. The federal regulation permits the growth of food-chain crops on land treatment units if the owner or operator demonstrates that

hazardous constituents will not occur in greater concentrations in or on the crop grown in the unit than in or on the same crop grown on untreated soils under similar conditions in the same region. The proposed Agency rule is more restrictive and prohibits crop production when toxic wastes are being treated, but allow it when wastes are treated which are hazardous but not toxic. Such wastes may have characteristics of ignitability, reactivity, corrosivity and oxidativity, which may be hazardous to handle, but which will not be transferred to humans through the food chain. EPA does not distinguish between toxic and non-toxic hazardous waste and allows food chain crop production on a land treatment unit that receives any kind of hazardous waste if it can be demonstrated that no substantial risk to human health exists.

The goal of land treatment is to treat wastes in the soil rather than to contain wastes as in a landfill. If successful, it is reasonable to allow the land to be returned to food chain crop production after the wastes have been sufficiently treated. Treatment can be either the breakdown of waste constituents until they are no longer a health hazard or the immobilization of waste constituents within the soil so that they are not transported from the site. The rule provides a procedure for returning a unit to production after the active life.

Certain wastes, such as metal waste, will not be transformed or degraded but are instead immobilized in the treatment zone.

Heavy metals are a concern because they can adhere to or be taken up by plants which, when consumed by humans or food chain animals, may cause adverse health effects. Cadmium is the metal of greatest concern because under acidic soil conditions, plants are able to take up high levels without exhibiting any adverse effects. When these plants are consumed, the cadmium accumulates in the liver and kidneys and can eventually cause damage to these organs. Toxic metals, such as mercury or lead may also be a concern if they enter the food chain in a toxic form. However, the potential for transport of metals into the food chain is diminished when conditions encourage immobilization in the soil.

The federal regulation establishes certain levels for cadmium application based on the soil pH and cation exchange capacity and on whether it is an annual or cumulative rate. They also provide a phased schedule through 1987 for reducing the annual application rates. 6 MCAR § 4.9319 E. does not allow all these cadmium application options but instead addresses cadmium application in a more simplified manner. The annual cadmium application rates in the federal regulations are intended to prevent excessive crop uptake during the time when the cadmium is most available, during the initial year following application. However, because 6 MCAR § 4.9319 E. does not allow food chain crop production during the active life of the unit, it is unnecessary to include this annual rate, as only the cumulative rate will affect the food chain crops grown after closure. Also, because the annual rate is not

relevant, there is no need for the rules to include the federal phased schedule for reducing annual cadmium application rates.

The federal regulations provide for various cumulative cadmium limits based on the soil pH. If the pH is less than 6.5, only 5 kg/ha of cadmium can be applied over the life of the unit. If the pH is more than 6.5, higher rates of cumulative cadmium application are allowed, the actual rate being based on the soil cation exchange capacity. This rule differs in the approach to cumulative cadmium rates, yet the ultimate effect is equivalent to the federal regulation. While the federal regulation requires a demonstration of safety for all hazardous constituents except cadmium, and establishes certain levels for cadmium application, the Agency's proposed rule extends the demonstration of safety requirement to cadmium application and also provides application limits as established in the federal regulation. However, the rule does not have any pH restrictions while the federal regulation requires that the correct pH be maintained whenever food chain crops are grown.

The federal regulation allows for cumulative cadmium applications of 5, 10 and 20 kg/ha if the pH is at least 6.5 whenever food chain crops are grown. In Minnesota it is not always possible to determine what the background pH of the soil was because farming practices can greatly alter the natural



soil pH. Because background levels cannot be determined, it is not possible to predict that the pH will remain at a certain level after closure of the unit. It is not reasonable to allow waste application at a certain rate on the assumption that the pH will always be maintained at the correct level. For this reason, the rule does not specifically address soil pH but instead requires a demonstration that the hazardous constituents will not present a significant health risk. It is expected that when cadmium wastes are applied, the demonstration will necessarily address soil background pH or operational procedures to prevent adverse food chain effects.

A demonstration is required if food chain crops will be grown during the active life of a land treatment unit even though the wastes applied are not toxic. A demonstration is also required when food chain crop production begins after the active life of a unit which has received toxic waste. This demonstration must be developed according to the same criteria as the demonstration required for establishing the feasibility of land treatment. The demonstration must be scientifically designed and must include a showing that hazardous constituents are not in food portions of the crop in greater concentrations than in similar crops in the area. Because there is such a wide range of land treatment options, this is a reasonable requirement to provide assurance that the food chain will not be affected and should not present an unreasonable burden to the owner or operator.

6 MCAR § 4.9319 F. requires an unsaturated zone monitoring program. This is in addition to the ground water monitoring which is required under 6 MCAR § 4.9297. An unsaturated zone monitoring program is necessary to provide feedback on the success of the treatment in the treatment zone. This information can be used to adjust the operating conditions at the unit in order to maximize degradation, transformation and immobilization of hazardous constituents in the treatment zone. The conditions at a land treatment unit are very different from those at a landfill, a surface impoundment or a waste pile. No liner exists between the treatment zone and the underlying soil, and the primary objective is not waste containment, but treatment through waste degradation or immobilization. Detection of waste constituents below the treatment zone does not necessarily mean that the system has failed, it may only indicate that certain conditions are causing unacceptable treatment. Because various aspects of land treatment operations can be altered, early detection of leakage can signal the need to change certain practices to improve treatment.

The unsaturated zone monitoring program requirements are very similar to the ground water monitoring requirements discussed in 6 MCAR § 4.9297. As in ground water monitoring, the monitoring parameters must be established in the facility permit and these parameters must be capable of indicating waste movement. It is not necessary to monitor for all constituents of the waste;

however the indicator parameters must be the constituents which are the most difficult to treat and therefore the most likely to leach from the treatment zone. It is reasonable to provide an alternative to monitoring all waste constituents in order to minimize expenses if it can be shown that such monitoring will provide an acceptable level of surveillance.

Subparagraphs F.2. and F.3. establish basic unsaturated zone monitoring requirements so that the data obtained will provide a useful indication of treatment effectiveness. It is reasonable to include requirements for determining background soil pore liquid and soil characteristics in order to establish a reliable standard for comparison with future monitoring data. Unlike the federal regulation this rule specifies certain time periods for conducting analyses and reporting information to the Director. A two-week time period is reasonable because it represents a balance between adequate time to conduct analyses and the need for a rapid response to leakage from the unit. The rule recognizes that in some cases it may not be possible to conduct analyses within two weeks and in those cases, prior approval may be obtained to extend the reporting period.

When it is determined that there is an increase in hazardous constituents below the treatment zone, the owner or operator must report the determination to the Director within seven days. The owner or operator is given ninety days to submit an application for permit modification to revise the operating practices at the facility to correct the conditions which caused the problem.

The ground water monitoring requirements of 6 MCAR § 4.9297 apply to land treatment units, so that if contamination reaches the ground water monitoring wells, the owner or operator must comply with all the compliance monitoring and corrective actions required by the rules.

Subparagraph F.8. provides a mechanism for the owner or operator to show that the increase in hazardous constituents is from an error in sampling and analysis or that the hazardous constituents are derived from another source. It is reasonable to allow such a showing and to provide adequate time to make the determination and prepare an application if permit modifications are necessary. However, it is important that the rule specifies that the showing does not relieve the owner or operator of the need to proceed with actions to correct the situation and, if necessary, apply for permit modifications as if the unit were the actual source of contamination. The showing is in addition to, not in lieu of, the necessary notification and modifications to correct treatment zone problems.

Paragraph G. is based on 40 C.F.R. § 264.279 and establishes recordkeeping requirements for owners and operators of land treatment facilities. This rule requires that information on the waste applied, management procedures and monitoring results be maintained for the unit.

The closure and post-closure requirements for land treatment units are established in paragraph H. Closure begins within ninety days of the last waste application to a unit. The waste

material may not be completely treated in that time, so the rule requires that the owner or operator continue operation to ensure that waste treatment continues. The rule also requires that all measures be continued to prevent the loss of hazardous constituents from the unit and to monitor the unsaturated zone. Except as noted below, this rule is based on the provisions of 40 C.F.R. § 264.280.

The federal regulation allows the termination of soil pore liquid monitoring 90 days after the last waste application. The Agency's proposed rule does not allow this termination because this limit is not necessarily applicable to all types of waste under all conditions. It is possible that waste applied in the winter will not even begin to be degraded until after 90 days. It is preferable to require that the monitoring continue through the closure and post-closure care period and then provide for a variance or a reduction of the post-closure care period as provided in 6 MCAR § 4.9300. The post-closure care period can be reduced if it is found that the reduced period is sufficient to protect human health and the environment. It may be shown that no soil pore liquid monitoring is necessary after a certain period of time and so may be discontinued. It is preferable to make such changes through case by case evaluation rather than as the result of an inflexible time limit.

The rule requires that the design and operating requirements be observed through the closure period. These requirements also

apply through the post-closure period unless the level of hazardous constituents in the treatment zone is not above background levels. It is reasonable to require post-closure care if hazardous constituents remain in the soil and are subject to possible leaching or erosional loss. It is also reasonable to provide an option for discontinuing post-closure care if the hazardous constituents are no longer present. It is expected that land treatment will frequently be used to break down and degrade organic waste compounds so that no hazardous materials will remain. When the soil level of hazardous constituents has returned to background levels, it is reasonable to discontinue hazardous waste management practices.

Paragraph I. addresses ignitable or reactive wastes, which may not be land treated unless the material is immediately incorporated so that it no longer exhibits ignitable or reactive characteristics and the specified precautions are taken to prevent undesirable reactions. This provision is identical to 40 C.F.R. § 264.281. Paragraph J. addresses the land treatment of incompatible wastes and is identical to 40 C.F.R. § 264.282. Such treatment is prohibited unless the necessary precautions are taken to prevent undesirable reactions. These restrictions are reasonable because of the potential for adverse health and environmental effects as a result of waste reactions. The Agency is relying on the EPA background documents on ignitable, reactive

and incompatible wastes listed in Part VIII. as support for these provisions.

6 MCAR § 4.9320

Rule 6 MCAR § 4.9320 establishes the design and operating requirements for landfills which are used for the disposal of hazardous waste. The requirements of this rule address the necessary measures to prevent the movement of hazardous constituents from the disposal facility to ground water and the surrounding area. This rule is based on 40 C.F.R. §§ 264.300 - 264.316 although certain changes have been made which will be discussed below. The Agency is relying on the EPA background documents on landfills and on land disposal facilities listed in Part VIII. as support for this rule.

Paragraph A. is identical to 40 C.F.R. § 264.300 and addresses the applicability of the landfill rule. Paragraph B. contains the locational standards for hazardous waste landfills. These standards are necessary to eliminate unsuitable areas from consideration and to specify the type of information that must be obtained in order to adequately evaluate the suitability of the site. The locational standards for landfills are the same as those for surface impoundments and waste piles. These requirements are discussed in connection with proposed rule 6 MCAR § 4.9317 B., see pp. 187-189, supra., and that discussion will not be repeated here.

6 MCAR § 4.9320 C. establishes the design and operating requirements which provide the performance standards for the landfill liners and leachate collection and removal systems. 40 C.F.R. § 264.301 requires a minimum of one liner which does not allow wastes to pass into it. The Agency's proposed rule is more stringent in that in all cases a second liner is required. The rule requires double liners with a leak detection, collection and removal system between them and a leachate collection and removal system above the upper liner. A double liner system, while more expensive, is the preferable design for a landfill because it provides a back-up in the event of the failure of a liner and also enables the detection of leaks before they leave the system. A liner system may be a combination of an impermeable membrane and compacted soil, or may be two impermeable liners of either the same or different materials. Both liners must be capable of meeting performance standards established in the rule and be chemically and physically capable of containing the wastes being landfilled. The Agency's rationale for rejecting the single liner approach is discussed in connection with proposed rule 6 MCAR § 4.9317 C., see pp. 190-194, supra., will not be repeated here.

A leachate collection and removal system is required to prevent the accumulation of leachate or liquid on the upper liner. If leachate accumulates, it could exert a hydrostatic force on the liner and present a serious environmental concern if a leak



develops and the leachate escapes. Like the liner system, it is essential that the collection and removal system be constructed of acceptable materials to withstand the chemical and physical forces in the landfill. It is also important that the system be capable of operating without clogging because replacement or repair will be a practical impossibility after waste and cover material are in place.

The leachate collection and removal system must be designed and constructed so that it will continue to function through the scheduled post-closure period. 40 C.F.R. § 264.301 only requires that this system operate through the closure period. Although the active life and closure period will be the time when maximum leachate is generated, the potential for liquid accumulation and subsequent leakage continues following closure and the system should be designed to remove continued leachate production. To allow otherwise increases the potential for ground water to become contaminated if a leak develops in the liner system.

Additional design considerations addressed in the rule are necessary to prevent the transport of waste material from the landfill and to minimize leachate production. The proposed rule requires that each cell be appropriately sized to minimize the amount of liquid entering the cell due to precipitation and that the run-on of rainfall and snowmelt water into the active area must be prevented so that the excess liquids do not generate

leachate. The run-off of water and erosion by wind must also be controlled so that hazardous constituents are not transported from the landfill area. Leachate is generated by liquids coming into contact with waste materials. Minimizing the amount of liquids which come into contact with the waste material should in turn reduce the amount of leachate which is generated. It is therefore reasonable to require these design and operating measures to reduce the amount of leachate which could escape and enter the ground water should the liner and leachate collection system fail. The rationale for using a 100-year storm event instead of the 25-year storm utilized by EPA has been discussed in connection with 6 MCAR § 4.9318 C., see pp. 209-210, supra., and will not be repeated here.

Paragraph D. is taken from 40 C.F.R. § 264.302(b) and (c). and establishes the procedure to be followed if a leak is detected. If liquid is detected between liners, it must be removed and the Agency Director must be informed. If possible, the liner may be repaired or replaced and a certification that the leak has been stopped must be obtained. In this case, the landfill has been returned to design standards and can continue to be monitored as a double-lined unit. If it is not possible or feasible to repair the liner, the rule provides a second option. The landfill can be operated as a single-lined unit with the leak detection system between the liners now serving as the leachate collection system. If only one liner remains to contain wastes,

the ground water monitoring program must be increased beyond the original requirements because of the increased risk that an undetected leak in the remaining liner will occur which may contaminate ground water.

As is also the case with surface impoundments and waste piles, the federal regulations provide an exemption from the specified liner requirements if the owner or operator can demonstrate that an alternative design and operating procedure will prevent the migration of hazardous constituents to ground water at any future time. No such exemption is provided in these rules. It is extremely unlikely that a system without liners could be designed which would provide acceptable protection to Minnesota's ground waters. As discussed in connection with 6 MCAR § 4.9317 C. at p. 193, supra., if such a system could be designed, it is more reasonable to allow its use through a variance than to include a special provision in the rule.

The federal regulation also provides an exemption from all ground water monitoring requirements if the landfill has a double liner and leak-detection system. A similar exemption is also provided for double-lined surface impoundments and waste piles. Without a ground water monitoring program, contamination could go undetected until it reaches a drinking water well. It is therefore preferable to require a ground water monitoring program for all landfills, no matter how a landfill is designed, to provide

additional assurance of safety. As discussed in connection with 6 MCAR § 4.9317 C., see pp. 191-192, supra., the Agency does not believe such an exemption provides sufficient protection for the environment. That discussion will not be repeated here.

Paragraph E. requires that the liners be inspected during and immediately after installation to ensure they are not damaged or improperly installed and are capable of containing the wastes in the future without failure. The installation of the liners must be certified by a qualified engineer to ensure that the liner was installed according to the approval specifications. Paragraph E. also requires that the mechanisms to control leachate generation and pollutant dispersal be inspected on a weekly basis. The requirements of this paragraph are identical to those of 40 C.F.R. § 264.303. 6 MCAR § 4.9320 F. requires that a landfill must be surveyed and accurate records maintained. This paragraph is identical to 40 C.F.R. § 264.309. It may also be necessary to excavate material at some future date so that it is important to maintain a record to locate wastes in the disposal area to aid retrieval.

6 MCAR § 4.9320 G. establishes the closure and post-closure care requirements for landfills. These requirements are taken from 40 C.F.R. § 264.310. At final closure, or when each cell is closed, a suitable cover must be applied over the filled area. A suitable cover is one which will provide long-term minimization of

the movement of liquids into the landfill with a minimum of maintenance. It is important to prevent liquids from entering the landfill to minimize contact between the waste materials and water and to reduce the amount of leachate which must be collected and removed. It is reasonable to require that the cover have a permeability less than or equal to the permeability of the bottom liner in order to avoid a buildup of liquid in the closed landfill. Because the rule requires at least one liner which will not allow wastes to pass into it, the cover liner must include a material similar to the least permeable bottom liner.

After the cover is in place and closure is complete, post-closure care begins. It is reasonable to require that the leachate collection and leak detection system be routinely maintained and monitored to remove leachate as it is generated. The actual frequency of monitoring must be determined on a case by case basis as each landfill will require different procedures that may change over time. The requirements to prevent erosion of the final cover and to protect and maintain the surveyed benchmarks are reasonable because of the importance of maintaining the integrity of the cover. Erosion of the soil over the cover may expose the cover to ultraviolet radiation and weathering. As the materials deposited in the landfill break down and settle, the cover material may also settle. It is important to regularly survey the closed landfill to ensure that the cover has not subsided to the extent that it is under strain or that water accumulates in low areas.

If liquids are detected in the leak detection system during the post-closure care period, they must be removed and the Agency must be notified. Because the presence of liquids may indicate that the upper liner has failed, it is assumed that the landfill has become a single-lined unit and the ground water monitoring requirements are increased. The increased monitoring requirements are discussed in connection with 6 MCAR § 4.9297 K. at pp. 150-154, supra.

Paragraphs H. and I. are taken from 40 C.F.R. §§ 264.312 and 264.313 and establish special requirements for ignitable, reactive, and incompatible wastes. It is reasonable to require special treatment for wastes that may generate fumes, explosions, or fire so that they do not present a safety hazard or damage the integrity of the landfill liner system. The rule requires that such wastes either be treated so that they no longer exhibit ignitable, reactive, or incompatible characteristics, or be handled so that no adverse reactions occur.

6 MCAR § 4.9320 J. differs from the federal regulations governing the disposal of liquid wastes. 40 C.F.R. § 264.314 allows bulk or non-containerized liquid to be landfilled if the landfill has a liner and a leachate collection system. Paragraph J. does not allow disposal of bulk liquids in landfills. Wastes must be treated so that no free liquids are present prior to land-filling. The Agency does not believe it is appropriate to allow liquids to be deposited in a landfill when the design and operation standards are intended to minimize the production of leachate

and the potential for leachate migration. Bulk liquids will reduce the absorptive capacity of the landfill. Placement of bulk liquids into a landfill will only add to the formation of leachate. Eventually, most of this liquid would reach the leachate collection and removal system and would have to be removed, treated, and disposed of outside of the landfill. It is preferable to require that bulk liquids be treated before being landfilled so that no free moisture exists or to require sufficient absorptive capacity to accommodate the liquid (such as in laboratory packs). Very small containers of liquid do not present a serious leachate production concern and are, therefore, allowed in a landfill.

40 C.F.R. § 264.314 also allows the disposal in landfills of liquid bearing containers designed for a use other than storage. The EPA regulation would allow the disposal of batteries or transformers which contain liquid. It is likely that such containers will eventually break down and the liquid will be released. The Agency's proposed rule does not allow disposal of such containers unless the liquid is drained before disposal.

Paragraph K. establishes the requirements for disposing of containers in a landfill. This paragraph is taken from 40 C.F.R. § 264.315 and provides that containers must be either 90 percent full or crushed, shredded or similarly reduced in volume before burial in the landfill. It is important that containers be either

full of waste, crushed, or shredded so that voids do not occur in the fill area after disintegration of the container. If empty containers are deposited in the landfill and subsequently decay, the void will be filled with overlying material, eventually causing subsidence of the final cover material. Such subsidence may damage the cover liner and create conditions of ponded water above the landfill.

6 MCAR § 4.9320 L. addresses the disposal of liquid wastes in overpack drums, or laboratory packs and is based on 40 C.F.R. § 264.316. The rule allows liquid wastes to be disposed of in a landfill if they are placed in a container which can provide absorptive capacity for all the liquid in the event that the container should be damaged.

6 MCAR § 4.9321

Rule 6 MCAR § 4.9321 establishes the specific facility requirements for owners and operators of facilities that thermally treat hazardous waste. This rule requires owners and operators of thermal treatment facilities to meet a number of performance standards coupled with various operating requirements most of which are intended to insure that the performance criteria are continually met. These requirements are based on EPA's incinerator regulations set forth in 40 C.F.R. §§ 264.340 - 264.351. In adopting its regulations EPA prepared extensive background documents justifying the reasonableness of its requirements. That information is contained in the discussion at 46 F.R. 7666



(January 23, 1981), 47 F.R. 27520 (June 24, 1982) and in the other background documents on incinerators and thermal treatment listed in Part VIII. The Agency is relying on these documents as support for this rule.

Although EPA's regulations apply only to incinerators, the provisions of this rule apply to all thermal treatment facilities that treat hazardous waste. The Agency believes that in order to protect human health and the environment thermal treatment facilities that choose to treat hazardous wastes should be capable of achieving as effective treatment as incinerators that burn hazardous waste, and should therefore be subject to the same standards. Facilities that cannot meet these standards should not be used to treat hazardous wastes.

If there are no facility standards for thermal treatment facilities, no hazardous waste facility permits could be issued to such facilities. Under this situation thermal treatment facilities other than incinerators would either continue to operate under interim status standards indefinitely without being subject to emission limitations or treatment efficiencies which incinerators would be required to meet or would be required to cease operations. Even if the Agency chose to issue permits to such facilities, there would be no standards on which to base permit conditions. In either case, this would serve to encourage thermal treatment of hazardous wastes by facilities that are not

capable of achieving as effective treatment as incinerators. This is not acceptable. If and when EPA issues specific facility standards for thermal treatment facilities other than incinerators, the Agency will review those standards and make any appropriate amendments. Until then, the requirements of this rule should apply to all thermal treatment facilities unless otherwise exempted.

Paragraph A. establishes the applicability of this rule. This paragraph incorporates the exemptions based on the type of waste being burned found in 40 C.F.R. § 264.340. The Agency, however, did not agree with EPA that the exemptions should be mandatory but instead incorporates the decision into the permitting process.

This rule also contains a provision allowing the Agency Director to reduce the requirements a thermal treatment facility whose primary purpose is energy production has to meet. After reviewing the waste management procedures employed at energy production facilities, the Agency has determined that such facilities can be adequately regulated under a reduced set of requirements. Energy production facilities will often burn hazardous waste in conjunction with large quantities of traditional fuels such as coal, oil or gas. These hazardous wastes serve as fuel supplements because of their BTU content. Generally the amount of waste burned is insignificant compared to the amounts of regular fuel being consumed. Frequently burning is

the best management technique for the waste being burned. The facility must submit information to the Director justifying the operation of the facility under reduced requirements. If the Director finds that the facility would not endanger human health or the environment under such conditions, the Director may reduce the requirements accordingly. This rule is reasonable since the primary purpose of the hazardous waste rules is to protect human health and the environment, and if this can be accomplished with reduced requirements and without causing excessive capital expenditures, the intent of the rules will be met.

Paragraph B. is based on 40 C.F.R. § 264.341 and requires the owner or operator to perform an analysis of the waste to be burned. Required waste analysis takes two forms. First on an on-going basis the operator must ensure that waste feed to the incinerator does not deviate from that defined in the permit. The permit will be written to specify wastes which the facility has demonstrated its ability to treat adequately. Thus, for waste feeds not specified in the permit, there is no assurance that the required performance standards can be met, especially in the absence of defined operating conditions. As a result, the rule requires facility operators to analyze waste feeds to ensure that the facility remains within the term of its permit. A second form of waste analysis is required as part of each permit application and trial burn plan. In these cases the applicant must describe

certain physical properties of the waste feed and must analyze the waste sufficiently to identify any hazardous organic constituents listed in 6 MCAR § 4.9137. A comprehensive analysis of the hazardous organic constituents of a waste as it is to be thermally treated is necessary to identify the waste components to which the performance standards will apply. However, for new facilities this is limited to waste analysis information available to owners or operators.

Paragraph C. addresses the designation of Principal Organic Hazardous Constituents (hereinafter "POHCs") and is taken from 40 C.F.R. § 264.342. Waste feed mixtures will be specified for the permit. For each identified waste feed the permit will specify the POHCs which must be destroyed or removed. Selecting specific POHCs avoids the necessity for measuring compliance against perhaps dozens of constituents that may be present in a given waste in insignificant quantities, or that are easily destroyed relative to other constituents present. The POHCs which will most likely be designated are those that are most difficult to destroy, and/or those present in large quantities or high concentrations. This will generally ensure that less stable hazardous organic constituents are also destroyed.

Paragraph D. sets forth the performance standards which thermal treatment facilities must meet. These are taken from 40 C.F.R. § 264.343. Subparagraph D.1. requires that a destruction and remo-

val efficiency of 99.99% be achieved for each POHC designated. EPA's research indicates that this standard is currently attainable by the existing technology of high quality commercial hazardous waste incineration and that for typical waste feed rates, most organic wastes will present no significant health hazard when treated to a 99.99% destruction and removal efficiency.

Subparagraph D.2. sets forth a two-fold stack emission limitation for hydrogen chloride. A facility may emit either 1.8 kilograms per hour or one percent of the hydrogen chloride in the stack gas prior to entering any pollution control equipment. This approach is reasonable since it is a base emission level which most facilities could meet, but requires facilities not able to meet that level to reduce emissions by removing 99% of the hydrogen chloride through the use of pollution control equipment. Since a 99% removal rate represents currently achievable technology, this is a reasonable requirement. This performance standard is further discussed at 47 F.R. 27526 - 27527 (June 24, 1982).

Subparagraph D.3. establishes a particulate matter emission limit. This limit is taken from 40 C.F.R. § 264.343(c) and is discussed at 47 F.R. 27526 (June 24, 1982). The rationale for limiting particulate matter is that particulates from hazardous waste combustion can absorb hazardous constituents onto their surface or may themselves be hazardous.

Paragraph E. contains provisions regarding thermal treatment facility permits and is taken from 40 C.F.R. § 264.344. The rationale behind these provisions is discussed at 47 F.R. 27522. (June 24, 1982). Paragraph F. sets forth the operating requirements for thermal treatment facilities and is based on 40 C.F.R. § 264.345. The basis for these requirements is discussed at 46 F.R. 7666 - 7677 (January 23, 1981) and 47 F.R. 27520 - 27531 (June 24, 1982). The Agency has added two provisions relating to operating requirements necessary for compliance with federal and state air quality rules and statutes. These provisions are contained in subparagraphs E.1. and E.2.f. This will help clarify that thermal treatment facilities may also be subject to other rules relating to air quality and that the operating requirements may need to be specified so that compliance with all applicable standards is achieved.

Paragraph G. specifies the monitoring, reporting, and inspection requirements and is based on 40 C.F.R. § 264.347. These requirements are discussed at 46 F.R. 7666, 7670 and 7674 (January 21, 1981) and 47 F.R. 27527 27529 (June 24, 1982). A provision referencing the requirements of federal and state rules has been added to subparagraph 1.c. The Agency has also added provisions regarding oxygen and carbon dioxide monitoring to subparagraphs G.1.a. and G.1.b.

The Agency has determined that carbon monoxide monitoring is not sufficient to assure that a thermal treatment facility is

operating properly. Therefore additional monitoring requirements have been established. Due to equilibrium considerations, carbon monoxide concentrations may not be a reliable indicator of destruction efficiency. Also, although carbon monoxide monitoring may indicate whether the thermal treatment facility is operating according to the permit conditions, these monitors are not infallible and are subject to inaccuracies. If the carbon monoxide monitor were to fail or begin to register inaccurate readings, there would be no way for the operator to know if the thermal treatment facility is actually operating properly. Since the facility is treating hazardous waste and improper operation could have severe consequences such as the emission of hazardous constituents or an explosion at the facility, it is reasonable to require some redundancy in emission monitoring. By monitoring for oxygen and carbon dioxide in addition to carbon monoxide, the Agency and the public are assured that any improper operation can be detected quickly and corrected by the operator. Also, the use of three monitors provides additional information regarding compliance or noncompliance with permit conditions.

Thermal treatment facility owners and operators are required to do a trial burn to show compliance with the performance standards and to obtain a permit. However, once a permit is issued the facility is assumed to be in compliance with the performance standards if it is in compliance with the operating conditions of the

permit. Since it is not feasible to require continuous emission monitoring for hazardous constituents, continuous emission monitoring of indicators is required. The permit would contain limitations for oxygen, carbon dioxide, and carbon monoxide.

Continuous monitoring would then indicate whether the facility was in compliance with the permit conditions.

Oxygen monitoring will indicate whether an explosion hazard is developing, and sufficient oxygen is present to fully combust the hazardous waste. If the oxygen level is too low in the primary chamber and the carbon monoxide concentration is high, when oxygen is added in the secondary chamber, an explosion could result due to the rapid oxidation of the carbon monoxide. If insufficient oxygen is present, the hazardous wastes will not be completely combusted causing the generation and possible emission of volatile organic compounds, carbon monoxide and soot. This is an indication that the thermal treatment facility is not operating properly and that corrections to operating procedures, such as a reduction in waste feed, must be made quickly. Therefore, it is reasonable to require oxygen monitoring, so that the operator will be alerted to the development of such situations and can make the necessary corrections quickly.

Carbon dioxide monitoring provides additional information which can be used in determining combustion efficiency. Based on flow rate, and carbon monoxide, oxygen and carbon dioxide



concentrations, it can be determined whether the facility is exceeding the design capacity. If the design capacity, which is included in the permit, is exceeded, the combustion and destruction efficiencies decline. Since the performance standards include a destruction and removal efficiency limit, it is necessary that the combustion efficiency not decline below acceptable limits. If it does, then the facility may not be in compliance with the destruction and removal efficiency standard. A rise in both carbon monoxide and carbon dioxide levels beyond those specified in the permit would indicate that the efficiency has declined and that corrective measures, such as a reduction in waste feed rate or an increase in temperature, should be taken by the operator. In order for the operator to be aware of this situation and to correct it quickly, carbon dioxide monitoring is necessary and reasonable.

Paragraph H. specifies the closure requirements for thermal treatment facilities and is taken from 40 C.F.R. § 264.351.

Paragraph I. sets forth the requirements for the open burning of waste explosives. This is taken from 40 C.F.R. § 265.382.

Although EPA covers open burning of waste explosives under interim status only, the Agency has decided to include these provisions under the facility standards as well as under the interim status standards. If there are no facility standards for open burning of waste explosives, no hazardous waste facility permits could be

issued. Under this situation open burning of waste explosives would either continue indefinitely under interim status standards or would cease. Even if the Agency chose to issue permits to such facilities, there would be no standards on which to base permit conditions. If and when EPA issues specific facility standards for open burning of waste explosives the Agency will review those standards and make any appropriate amendments. The actual provisions are the same as EPA's and are discussed in the background documents on open burning listed in Part VIII. and at 45 F.R. 33217 (May 19, 1980).

6 MCAR § 4.9322 describes Cochran's approximation to the Behrens-Fisher Student's t-test and is taken from 40 C.F.R. Part 264 Appendix IV verbatim. This approximation method is used to determine whether a statistically significant change has occurred under the ground water monitoring program of 6 MCAR § 4.9297. The basis for the use of this methods discussed at 47 F.R. 32302 (July 26, 1982).

G. Chapter Six: Interim Status Standards, 6 MCAR  
§§ 4.9380 - 4.9422

Chapter Six contains the requirements that apply to owners and operators of existing hazardous waste facilities who have obtained interim status. Like Chapter Five, Chapter Six is also divided into two types of rules. Rules 6 MCAR §§ 4.9380 through 4.9413 are general standards applying to all treatment, storage,

and disposal facilities, while rules 6 MCAR §§ 4.9414 through 4.9422 deal with specific facility standards. The proposed rules establishing interim status standards are taken, with only minor modifications, from the EPA regulations establishing interim status standards which are set forth in 40 C.F.R. Part 265. Section 3005(e) of RCRA specifies that if the owner or operator of a facility which is in existence on November 19, 1980 notifies EPA, as required by Section 3010 of RCRA, and properly applies for a permit, the facility owner or operator is to "be treated as having been issued such permit." EPA refers to such an owner or operator as one who has "interim status". In keeping with the intent of Congress that hazardous waste management be regulated by national standards as quickly as possible, EPA promulgated minimum requirements, the Part 265 interim status standards, with which facilities must comply during this interim period.

The interim status procedure recognizes that it will take a considerable period of time for EPA to act on all facility permit applications. Accordingly, for facility owners or operators who notified EPA and applied for a permit, the EPA interim status period extends from the date the initial RCRA Section 3001 through 3005 regulations took effect to the date final administrative action on the permit application is taken. Interim status therefore permits a smooth transition to full regulation of TSDF's

under new standards by allowing owners and operators of existing facilities to continue to operate them until decisions on their permit applications are made while still ensuring that minimum environmental standards are met.

As with EPA it will take several years for the Agency to process permit applications for all the hazardous waste facilities in the state. Further, it is beyond the capability of hazardous waste facility owners and operators to comply with all of the requirements of the proposed Chapter Five rules between the date these rules are promulgated and their effective date. While it is reasonable to allow existing facilities to continue to operate until a final determination is made on their permit application, Minn. Stat. § 116.081, subd. 1, requires all hazardous waste facilities to have a permit.

Interim status gives owners and operators what is, in effect, a permit-by-rule and allows owners and operators to be treated as having been issued a permit until final administrative disposition is made of their permit application. Thus, interim status both satisfies the mandate of Minn. Stat. § 116.081, subd. 1, and relieves the owner or operator of a hazardous waste facility of the possibility of being prosecuted for operating without a permit. However, in allowing continued operation it is also reasonable to require facilities to comply with basic facility standards to ensure protection of human health and the environment during the interim period.

As discussed at 45 F.R. 33159 - 33160 (May 19, 1980), EPA utilized three basic criteria as guidelines for deciding which standards should apply during interim status:

(1) Only those standards that can be met in a straightforward manner without need for substantial interpretation by, or negotiation with, EPA would apply during this interim period;

(2) Only those standards that do not require substantial capital expenditures would apply during this interim period; and

(3) Only those standards for which compliance can be achieved within the period between the date the regulations are promulgated and the date they become effective would apply during the interim period.

However, these criteria were utilized only as guidelines, and EPA included requirements in the interim status standards that are exceptions to these guidelines, requirements that EPA determined were of unusual importance and would provide benefits from early implementation in excess of the disadvantages. Two examples of such requirements are the closure and post-closure care regulations and the ground water monitoring provisions. Improper facility closure and abandonment has historically been a major cause of human health impacts and environmental damage. Therefore no facility should be permitted to close during interim status without being properly closed. Similarly, ground water monitoring requirements are necessary in order to know whether an existing facility may already have contaminated ground water.

The Agency agrees with the EPA approach and is utilizing EPA's regulations as a basis for the state rules. Accordingly, facility owners or operators who have federal interim status and owners or operators of an existing facility who have filed a permit application with the Agency within 90 days of the effective date of these rules shall be subject to the provisions of Chapter Six during this interim period.

The format of Chapter Six is the same as the format of Chapter Five. In addition both chapters contain many of the same provisions. The rationale for including these provisions is also the same. In discussing the reasonableness of the Chapter Six rules reference will be made to the corresponding rule in Chapter Five, if one exists, and a discussion of the reasonableness of provisions contained in both chapters will not be repeated. A discussion of the reasonableness of interim status standards and of the standards themselves is contained in the EPA Background Documents on Part 265 which are listed in Part VIII.

6 MCAR § 4.9380 and 4.9381

Rules 6 MCAR §§ 4.9380 and 4.9381 establish which facilities are governed by interim status. The provisions of these rules are based on 40 C.F.R. §§ 265.1. Paragraph A. sets forth general information and the effective dates of certain provisions in this

chapter. Existing facilities that were not required to obtain federal interim status but are required to obtain state interim status are exempted from the ground water monitoring and certain related requirements for a period of one year. The financial responsibility requirements do not take effect for 90 days to enable TSDF owners or operators to obtain the necessary financial assurance. This is reasonable since these facilities have not been covered by the federal ground water monitoring and financial assurance requirements and need time to develop a monitoring program, to install the necessary equipment and to obtain the financial assurance. Paragraph B. defines an existing hazardous waste facility as one in existence on, or under construction on, the effective date of these rules.

Paragraph C. sets forth the facilities that do not need to comply with the provisions of Chapter Six. All of the exemptions listed in this rule are also listed in 6 MCAR § 4.9280 C. and will therefore not be discussed here. The federal exemptions for ocean disposal, underground injection, and state permitted facilities have been dropped. This deletion is reasonable since ocean disposal is not applicable to Minnesota, Agency rule WPC 22 prohibits underground injection facilities, and the state, not EPA, will be issuing permits under this program. The exemption for facilities receiving small quantity generator wastes has also been dropped. This is reasonable since the state requires small quan-

tity generators who dispose of their wastes in Minnesota to dispose of their wastes at a facility which is permitted to handle hazardous waste.

6 MCAR § 4.9382

Rule 6 MCAR § 4.9382 establishes basic facility standards and is based on 40 C.F.R. §§ 265.10 - 265.12, 265.14 and 265.15. This rule sets total requirements on identification numbers, notices, security and inspections. The general facility requirements set forth in this rule, except for paragraph F, are substantively the same as the general facility standards set forth in 6 MCAR § 4.9281. As with all the requirements which appear in substantively the same language in both Chapter Five and Chapter Six, the only differences relate to the inclusion of permitting requirements in 6 MCAR § 4.9281. A discussion on the reasonableness of paragraph A. - E. of this rule is contained in the discussion on 6 MCAR § 4.9281 at pp. 112-114, supra., and in the EPA background documents on general facility standards listed in Part VIII. and will not be repeated here.

Paragraph F. relates to facilities which are located in a 100-year floodplain. Under current state rules a facility is prohibited from being located in a floodplain. However, since the proposed rule 6 MCAR § 4.9285 will permit the location of a facility in a 100-year floodplain if the necessary safeguards are



met and since existing facilities may be already located in floodplains, the Agency considers it to be reasonable to allow existing facilities which are located in a 100-year floodplain to continue to operate provided the facility can be operated in a manner which ensures that hazardous wastes are not released to the environment.

6 MCAR § 4.9383

Rule 6 MCAR § 4.9383 sets forth the training requirements for persons involved in the management of hazardous waste. This rule is intended to ensure that facility personnel have the requisite skills and knowledge to perform their tasks in a competent manner. The requirements of this rule are written as general performance standards to allow personnel training programs to be directed towards each specific facility's process or management technique. This rule was excerpted from 40 C.F.R. § 265.16 since the state's existing rules did not specifically cover personnel training. The provisions of this rule are substantively identical to the requirements of proposed rule 6 MCAR § 4.9282. The reasonableness of these requirements is discussed in connection with 6 MCAR § 4.9282 at pp. 114-115, supra., and in the EPA background documents on personnel training listed in Part VIII. and will not be repeated here.

6 MCAR § 4.9384

Rule 6 MCAR § 4.9384 sets forth the precautions to be

taken by all facility owners or operators and generators to prevent accidental ignition or reaction of ignitable or reactive waste or the mixing of incompatible wastes. This rule is taken from 40 C.F.R. § 265.17 and is substantively identical to proposed rule 6 MCAR § 4.9283. The reasonableness of these requirements is discussed in connection with 6 MCAR § 4.9283 at pp. 115-117, supra., and in the EPA background documents on ignitable, reactive and incompatible wastes listed in Part VIII. and will not be repeated here.

6 MCAR § 4.9385

Rule 6 MCAR § 4.9385 contains the requirements a facility must meet when analyzing hazardous waste received for treatment, storage, or disposal. The contents of this rule include when and how often a waste analysis must be completed, what constitutes a waste analysis, and the development of a waste analysis plan. This rule is based on 40 C.F.R. § 265.13 and is substantively identical to proposed rule 6 MCAR § 4.9284. The reasonableness of these requirements is discussed in connection with 6 MCAR § 4.9284 at pp. 117-118, supra., and in the EPA background documents on waste analysis listed in Part VIII. and will not be repeated here.

6 MCAR § 4.9386

Rule 6 MCAR § 4.9386 contains the general safety requirements for all facilities handling hazardous waste. The standards pre-

sented in this rule constitute the design, operation, and equipment requirements needed to minimize the possibility of serious environmental or public health hazards due to fires, explosions, or unplanned releases of hazardous waste. The contents of this rule are based on 40 C.F.R. §§ 265.30 - 265.35 and are substantively identical to proposed rule 6 MCAR § 4.9286. The reasonableness of these requirements is discussed in connection with 6 MCAR § 4.9286 at p. 121, supra., and in the EPA background documents on interim status standards on preparedness and prevention listed in Part VIII. and will not be repeated here.

6 MCAR § 4.9387

Rule 6 MCAR § 4.9387 sets forth the requirements for facility owners or operators concerning arrangements with local authorities for emergencies. The provisions of this rule are based on 40 C.F.R. § 265.37 and are substantively identical to proposed rule 6 MCAR § 4.9287. The reasonableness of this requirement is discussed in connection with 6 MCAR § 4.9287 at pp. 121-122, supra., and in the EPA background documents on preparedness and prevention listed in Part VIII. and will not be discussed here.

6 MCAR § 4.9388

Rule 6 MCAR § 4.9388 requires each hazardous waste management facility to have a contingency plan to minimize the potential hazards from fires, explosions, and other conditions leading to the release of hazardous wastes. The contingency plan must

describe actions to be taken by facility personnel in response to fires, explosions, or other emergency conditions. Items to be covered include the name of the facility's emergency coordinator, a list of the facility's emergency equipment, and the description of arrangements made with the local agencies or departments which may respond to an emergency at the facility. Copies of the plan must be kept at the facility and sent to the agencies that would become involved in an emergency. The provisions of this rule have been taken from 40 C.F.R. §§ 265.50 - 265.54. This rule is substantively identical to proposed rule 6 MCAR § 4.9288. The reasonableness of these requirements is discussed in connection with 6 MCAR § 4.9288 at pp. 121-123, supra., and in the EPA background documents on contingency plans listed in Part VIII. and will not be repeated here.

6 MCAR § 4.9389

Rule 6 MCAR § 4.9389 outlines the procedures to be followed during the emergency, requires each facility to have an emergency coordinator and identifies the basic functions expected of the coordinator during any emergency. These duties include notification of local authorities and assessment of the possible hazards that might result from the release of wastes at the facility. This rule is based on 40 C.F.R. §§ 265.55 - 265.56 (a) - (f) and is substantively identical to proposed rule 6 MCAR § 4.9289. The

reasonableness of these requirements is discussed in connection with 6 MCAR § 4.9289 at pp. 123-124, supra., and in the EPA background documents on preparedness and prevention and contingency plans listed in Part VIII. and will not be repeated here.

6 MCAR § 4.9390

Rule 6 MCAR § 4.9390 indicates the proper procedures to be followed after an emergency for decontamination of equipment, disposal of contaminated soil or water, and recovered waste. This rule is based on 40 C.F.R. § 265.56 (g) - (j) and is substantively identical to proposed rule 6 MCAR § 4.9290. The reasonableness of these requirements is discussed in connection with 6 MCAR § 4.9290 at p. 124, supra., and in the EPA background documents on preparedness and prevention and contingency plans listed in Part VIII. and will not be repeated here.

6 MCAR § 4.9391

Rule 6 MCAR § 4.9391 requires hazardous waste facilities initiating shipments of hazardous waste from their facility to meet the generator requirements of Chapter Three. This rule is based on 40 C.F.R. § 265.71 (a) and is substantively identical to proposed rule 6 MCAR § 4.9291. The reasonableness of this requirement is discussed in connection with 6 MCAR § 4.9291 at pp. 124-125, supra., and will not be repeated here.

6 MCAR § 4.9392 - 4.9396

Rules 6 MCAR §§ 4.9392 through 4.9396 establish manifest system operation, recordkeeping, and reporting requirements for owners and operators of TSDFs. These rules are based on 40 C.F.R. 265.70 through 265.77 and are substantively identical to proposed rules 6 MCAR §§ 4.9292 through 4.9296. The reasonableness of these requirements is discussed in connection with 6 MCAR §§ 4.9292 - 4.9296 at pp. 125-130, supra., and in the EPA background documents on the manifest system, recordkeeping and reporting listed in Part VIII. and will not be repeated here.

6 MCAR § 4.9397 and 4.9398

Rules 6 MCAR §§ 4.9397 and 4.9398 establish certain ground water monitoring requirements for owners and operators of TSDFs. These rules are based on 40 C.F.R. §§ 265.90 - 265.94. For the most part the Agency is proposing to adopt the EPA regulations verbatim. The areas of difference are discussed below. In adopting the EPA language the Agency is relying on the background work done by EPA in adopting its regulations. A discussion on the reasonableness of these regulations is contained in the EPA Background Document on Part 265, Subpart F, Ground-Water Monitoring, which is listed in Part VIII.

Ground water monitoring is needed to identify sites that are

violating the human health and environmental standards by causing ground water contamination and to trigger appropriate action against those sites. The Agency believes that ground water monitoring is appropriate at facilities where hazardous waste is purposely placed onto or into the land. Therefore, proposed rule 6 MCAR § 4.9397 requires the owner or operator of a hazardous waste surface impoundment, landfill or land treatment facility who is seeking interim status to implement a ground water monitoring system capable of determining the facility's impact on the quality of ground water in the uppermost aquifer underlying the facility.

It is unnecessary to require above-ground storage tanks or incinerators to have ground-water monitoring systems because leakage of hazardous waste into the ground can be detected visually at such facilities. The monitoring program seeks to detect contamination in the uppermost aquifer because that will be the first ground water to be affected by a leaking disposal facility.

Rule 6 MCAR § 4.9397 allows a lesser degree of ground water monitoring in those circumstances where an owner or operator can demonstrate that there is a low potential for hazardous waste constituents to migrate to water supply wells or surface water via the uppermost aquifer. A complete waiver of monitoring is available under specified circumstances to surface impoundments used to neutralize corrosive wastes and is also available when the

owner or operator can demonstrate that there will be no potential for migration to water supply wells or surface water. An owner or operator who wishes to install a lesser degree of monitoring must document the justification for such an approach and must have the documentation certified by a qualified geologist or geotechnical engineer. Because of the expense involved in designing and installing a ground water monitoring system, it is reasonable to permit a lesser degree of monitoring when it can be established that allowing such lesser monitoring will not harm human health or the environment.

Paragraph D. of proposed rule 6 MCAR § 4.9397 requires the facility owner or operator to drill a sufficient number of wells, both upgradient and downgradient to characterize the potential contamination of ground water quality caused by his hazardous waste facility and provides general criteria for their placement and construction. While a minimum number of wells is required, ultimately the burden is on the owner or operator to develop the monitoring system necessary to accurately characterize the aquifer and detect migration.

The proposed rule also sets forth sampling and analysis requirements. The rule requires monitoring for three sets of parameters that each serve a separate purpose. The first set reflects the aquifer's suitability as a drinking water supply. While the Agency is concerned about ground water protection for a



variety of purposes, use of ground water as a drinking water source is of particular concern. The purpose of this initial sampling for drinking water parameters is to identify facilities that may be severely degrading present and future drinking water supplies. The second set of parameters includes those generally recognized as useful for characterizing ground water quality. These contaminants are ubiquitous in the environment and are often used to characterize a ground water supply's suitability for a variety of purposes. Information on these parameters will be useful in any assessment of ground water contamination that follows the determination that the facility is leaking. The third set of parameters consists of four indicators that will be used to determine if a facility is leaking. The four indicators reflect changes in the organic and inorganic makeup of ground water. A statistically significant change in these indicators between the initial background concentration or value and those from downgradient wells suggests that organic or inorganic substances are being introduced into the aquifer by the facility.

The Agency has added a provision in 6 MCAR § 4.9397 F.2.d. which allows the Director to designate waste-specific parameters for which the ground water samples must also be analyzed. The ground-water monitoring system is intended to determine if contamination of ground water by waste or waste constituents has occurred. If there are specific waste constituents which cannot be detected in

the ground water by analysis of the parameters designated in 6 MCAR § 4.9397 F.2., the ground water must be analyzed for a parameter which can detect the waste constituent in order for the system to comply with its intended purpose. Therefore, it is reasonable for the Director to designate such waste-specific parameters if and when needed.

The Agency requires quarterly sampling and analysis under 6 MCAR § 4.9397 F.4.b. rather than semi-annual sampling and analysis as required in 40 C.F.R. § 265.92 (d). Currently, permitted sanitary landfills are required to sample and analyze ground water monitoring wells quarterly. The potential for adverse effects on ground water quality due to hazardous waste land management facilities is equal to if not greater than that due to sanitary landfills. Therefore, it is reasonable to require sampling and analysis frequencies equal to those for sanitary landfills. Also, due to the climatic changes in Minnesota, it is necessary to sample and analyze ground water at least once during each of the four seasons of the year to obtain representative results. This is due to the fluctuations in ground water flow and depth caused by varying weather conditions. Since the monitoring results given in the annual report will be used in determining facility performance, quarterly results provide a more accurate basis for making that determination than do semi-annual results. This is important to both the Agency and the facility because enforcement actions

could begin based on the performance determination. Since a series of several values may be needed to accurately determine whether a trend of ground water contamination is developing, quarterly results will provide that information over a shorter period of time than semi-annual results. The sooner it can be established that contamination is occurring, the sooner remedial actions can be taken to minimize the extent and degree of contamination. Therefore, it is reasonable to require quarterly sampling and analysis of ground water.

Paragraphs G. and H. establish reporting and record keeping requirements. The facility owner or operator is required to retain the ground water data for the active life of the site and for the duration of the post-closure care period. The Agency believes that the actual monitoring data may provide useful information in determining the type and extent of ground water contamination.

6 MCAR § 4.9398

Rule 6 MCAR § 4.9398 requires the owner or operator to prepare an outline of a ground water quality assessment program to be used in the event sampling establishes any suspected discharge from the facility. Upon detecting any suspected discharge from the facility, the owner or operator is required to notify the Agency and develop and submit a plan for assessing the

quality of the ground water. The owner or operator must then implement this plan and determine as quickly as technically possible the rate and extent of migration and concentration of hazardous waste and hazardous waste constituents in the ground water.

6 MCAR § 4.9399

Rule 6 MCAR § 4.9399 contains the standards applicable to the closure of hazardous waste facilities under interim status. The objective of this rule is to require facilities to close in the manner necessary to protect human health and the environment. The Agency feels that to accomplish this objective, it is necessary that facilities plan in advance of closure the manner in which they will dispose of any remaining hazardous waste and decontaminate any equipment used in the process. The requirements of this rule are substantively identical to the requirements of proposed rule 6 MCAR § 4.9298. The specific language of this rule has been taken from the 40 C.F.R. §§ 265.110 - 265.112, as present state rules do not cover closure activities in the detail required by EPA for interim authorization. A discussion of the reasonableness of these requirements is contained in the discussion of 6 MCAR § 4.9298 at pp. 164-165, supra., and in the EPA background documents on closure listed in Part VIII. and will not be repeated here.

6 MCAR § 4.9400

Rule 6 MCAR § 4.9400 establishes the acceptable time allowance for completion of closure activities at a facility, the procedures for extension of this time limit and the requirements for equipment decontamination and certification of closure. The provisions of this rule are based on 40 C.F.R. § 265.113 - 265.115 and are substantively equivalent to proposed rule 6 MCAR § 4.9299. The reasonableness of these requirements is discussed in connection with 6 MCAR § 4.9299 at pp. 165-167, supra., and in the EPA background documents on closure listed in Part VIII. and will not be repeated here.

6 MCAR § 4.9401

Rule 6 MCAR § 4.9401 contains the requirements for post-closure care of hazardous waste disposal facilities and requires the owner or operator to develop a post-closure plan. The post-closure plan establishes the monitoring and maintenance practices for each facility which are necessary to detect and minimize any potential harm to human health and the environment from contamination of the surrounding air, land, or waters. This rule is based on 40 C.F.R. § 265.118 and is substantively identical to proposed rule 6 MCAR § 4.9300. The reasonableness of these requirements is discussed in connection with 6 MCAR § 4.9300 at pp. 167-168, supra., and in the EPA background documents on post-closure care listed in Part VIII. and will not be repeated here.

6 MCAR § 4.9402

Rule 6 MCAR § 4.9402 establishes the time period for post-closure care and the use of a facility's property during this time. This rule is based on 40 C.F.R. § 265.117 and is substantively identical to proposed rule 6 MCAR § 4.9301. The reasonableness of these requirements is discussed in connection with 6 MCAR § 4.9301 at p. 168, supra., and in the EPA background documents on post-closure care listed in Part VIII. and will not be repeated here.

6 MCAR § 4.9403

Rule 6 MCAR § 4.9403 requires that local land authorities be notified of all closure activities which occurred at any hazardous waste facility and be provided with a survey plat of the site indicating the location and dimension of disposal areas. This rule is based on 40 C.F.R. § 265.119 and is substantively identical to proposed rule 6 MCAR § 4.9302. The reasonableness of these requirements is discussed in connection with 6 MCAR § 4.9302 at pp. 168-169, supra., and in the EPA background documents on closure and post-closure care listed in Part VIII. and will not be repeated here.

6 MCAR § 4.9404

Rule 6 MCAR § 4.9404 requires that the deed to any property

where hazardous waste has been disposed include a notation to that effect. This rule is based on 40 C.F.R. § 265.120 and is substantively identical to proposed rule 6 MCAR § 4.9303. The reasonableness of these requirements is discussed in connection with 6 MCAR § 4.9303 at p. 169, supra., and in the EPA background documents on closure and post-closure care listed in Part VIII. and will not be repeated here.

6 MCAR § 4.9405 - 4.9413

Rules 6 MCAR §§ 4.9405 through 4.9413 establish the financial requirements for owners and operators of existing hazardous waste facilities seeking interim status. These requirements constitute a major portion of the interim status standards and are essential in assuring protection of human health and the environment from potential adverse effects due to improper closure or lack of post-closure care resulting from an owner or operator not having adequate financial resources. This is particularly true for existing facilities, since it is more likely that existing facilities have not been properly managed in the past due to the lack of facility standards and regulation. Financial requirements are needed to assure that sufficient funds are available for proper closure and post-closure care of existing hazardous waste facilities. Owners and operators of existing facilities should be preparing now for the cost of closure and

post-closure care, since facilities generate revenue during their operating life not after closure. If the funds are not established during the operating life of the facility, sufficient funds for closure and post-closure care will not be available when the facility closes.

Rules 6 MCAR §§ 4.9405 -4.9413 are based on 40 C.F.R. §§ 265.140 - 265.151 and are substantively equivalent to proposed rules 6 MCAR §§ 4.9304 - 4.9308 and 4.9311 - 4.9314. Since EPA has done a substantial amount of work in developing the financial requirements and ensuring that the requirements are consistent with current practices in the financial community, it is reasonable to utilize these requirements as a basis for the state requirements. A discussion of the rationale for the financial requirements is contained in the EPA Background Documents on Parts 264 and 265, Subpart H, Financial Requirements, which are listed in Part VIII. and is also contained in the discussions on proposed rules 6 MCAR §§ 4.9304 - 4.9308 and 4.9311 - 4.9314 at pp. 169-181, supra. Therefore this discussion will not be repeated here.

The remaining rules in Chapter Six set forth interim status standards applicable to specific types of hazardous waste facilities. These rules govern the storage, treatment or disposal



of hazardous waste in containers, tanks, surface impoundments, piles, and landfills, and land treatment, thermal treatment and chemical, physical and biological treatment facilities.

The rules in Chapter Six specifying facility standards contain essentially the same requirements as the rules in Chapter Five for new facilities of these types. However, the Chapter Six rules do not include the design or containment requirements found in the Chapter Five rules. This is a reasonable approach since the purpose of interim status standards is to maintain proper operating conditions at an existing facility to prevent the mismanagement of hazardous waste until the facility is permitted. Existing facilities will be upgraded based on a compliance schedule included in the facility permit and will be required to meet the design and containment requirements specified in Chapter Five at the end of this schedule.

6 MCAR § 4.9414

Rule 6 MCAR § 4.9414 establishes standards for existing facilities that store hazardous waste in containers. This rule includes provisions relating to applicability, the condition of the containers, the compatibility of the waste with the container, the management of containers, inspections, incompatible, ignitable and reactive wastes and closure. Paragraphs A.-F. of this rule are based on 40 C.F.R. §§ 265.170 - 265.175 and 265.177.

Paragraph H., which relates to proper facility closure, is not contained in the EPA regulations. It is reasonable to include provisions governing the closure of existing container storage facilities because it is as likely that this type of facility will close during the interim period as it is that any other type of facility will close and just as necessary that closure be accomplished in a manner that adequately protects human health and the environment. Rule 6 MCAR § 4.9414 is substantively equivalent to proposed rule 6 MCAR § 4.9315 except that paragraphs E. and F. of 6 MCAR § 4.9315, to the extent that they relate to containment systems, are not included in the interim status standards. The reasonableness of the requirements of 6 MCAR § 4.9414 is discussed in connection with 6 MCAR § 4.9315 at pp. 181-185, supra., and in the EPA background documents on containers listed in Part VIII. and will not be repeated here.

6 MCAR § 4.9415

Rule 6 MCAR § 4.9415 establishes standards for existing facilities that use tanks to store or treat hazardous waste. This rule includes provisions on applicability, general operating requirements, waste analyses and trial tests, inspections, closure, ignitable or reactive wastes and incompatible wastes and is based on 40 C.F.R. §§ 265.190 - 265.197. The general operating requirements and the provisions relating to inspections, closure,

ignitable, reactive and incompatible waste are substantively equivalent to the provisions of 6 MCAR § 4.9316. The reasonableness of these requirements is discussed in connection with 6 MCAR § 4.9316 at pp. 184-186, supra., and in the EPA background documents on tanks listed in Part VIII. and will not be repeated here.

Proposed Paragraph C. sets forth requirements for waste analysis and trial tests which are in addition to the waste analyses requirements of 6 MCAR § 4.9385. This provision is taken from 40 C.F.R. § 265.193. The purpose of this requirement is to prevent accidents and haphazard experimentation with new wastes or new treatment techniques when chemical treatment of large batches of waste is involved. Put another way, these requirements ensure that the operator knows not only the characteristics of the waste involved, but how that waste will behave in a treatment process, or how a new treatment process will affect the wastes and the facility. Haphazard experimentation or treatment of waste without trial tests may cause corrosion of containment devices, fires, explosions, and other problems associated with ignitable, reactive, or incompatible wastes. Trial tests, or documented information on similar wastes under similar treatment processes and similar operating conditions, should bring to light unanticipated problems before large batches of waste are treated.

6 MCAR § 4.9416

Rule 6 MCAR § 4.9416 establishes standards for existing facilities using surface impoundments to treat, store or dispose of hazardous waste. This rule contains provision on applicability, general operating requirements, the containment system, waste analyses and trial tests, inspections, closure and post-closure, ignitable, reactive wastes and incompatible wastes. The provisions of this rule are taken from 40 C.F.R. §§ 265.220 - 265.230. The provisions relating to inspections, closure if all waste is removed, ignitable, reactive and incompatible wastes and the general operating requirements, except as they relate to freeboard and containment systems which are discussed below, are substantially equivalent to the corresponding provisions of 6 MCAR § 4.9317. The reasonableness of these requirements is discussed in connection with 6 MCAR § 4.9317 at pp. 186-204, supra., and in the background documents on surface impoundments listed in Part VIII. and will not be repeated here.

Paragraph B. requires existing surface impoundments to have a minimum of two feet of freeboard. It is accepted engineering practice to design surface impoundments with sufficient freeboard to protect against overtopping by waves or precipitation, and most surface impoundments already have two feet of freeboard. As a result, an interim status freeboard requirement will not typically

require large capital outlays by owners or operators. For those facilities which do not meet the minimum freeboard requirements, the minimum freeboard can be established in a short period of time by such means as reducing the quantity of waste or adding additional height to the dikes.

Paragraph C. requires all earthen dikes to have a protective cover to minimize erosion and to preserve the structural integrity of the dike. The dikes are the main component of the primary containment system of a surface impoundment, which prevents the discharge of wastes onto land and surface water. Unprotected dikes have a greater potential for leaking or failing, thereby producing a hazard to human health and the environment. Providing dike protection is not difficult to do and will not require large capital outlays by owners or operators. Therefore, considering the benefit of reduced potential for dike leakage and failure, it is reasonable to require protective cover for dikes.

Paragraph D. contains additional provisions for waste analyses and trial tests. These provisions are essentially the same as those contained in proposed rule 6 MCAR § 4.9415 C. for tanks. The reasonableness of these requirements is discussed in connection with that provision at p. 275, supra., and will not be repeated here.

Paragraph F. establishes requirements for closure and post-closure care of a surface impoundment. These differ from the provisions of 6 MCAR § 4.9317 G. in that Paragraph F. provides for

not removing all the impoundment materials at closure even if there is not a double liner system in place and permits the owner or operator to elect to close the impoundment as a landfill. However, if an impoundment is to be closed as a landfill, the waste that remains must be capable of supporting a final cover. This approach provides flexibility for closure requirements and allows the waste to be left in place. By requiring that the impoundment is closed in accordance with the landfill closure requirements if the waste is left in place, human health and the environment will be adequately protected.

6 MCAR § 4.9417

Rule 6 MCAR § 4.9417 establishes standards for existing facilities that treat or store wastes in waste piles. This rule contains provisions on applicability, protection from wind, waste analysis, containment, ignitable, reactive and incompatible wastes, closure and post closure care. The provisions in this rule are based on 40 C.F.R. §§ 265.250 - 265.258.

Paragraph C. sets forth waste analyses requirements and is identical to 40 C.F.R. § 265.252. The reasonableness of waste analysis requirements for interim status facilities is discussed in connection with Rule 6 MCAR § 4.9415 at p. 275, supra., and in the EPA background documents on waste analysis listed in Part VIII. and will not be repeated here. The provisions relating

to wind protection, containment, ignitable, reactive and incompatible wastes, and closure and post closure care are substantially equivalent to the corresponding provisions of 6 MCAR § 4.9318 except to the extent that § 4.9318 contains design requirements. The reasonableness of these requirements is discussed in connection with 6 MCAR § 4.9318 at pp. 204-215, supra., and in the EPA background documents on waste piles listed in Part VIII. and will not be repeated here.

Paragraph D. establishes provisions regarding containment based on 40 C.F.R. § 265.253. The owner or operator is required to minimize leachate generation and contaminated material discharges by either underlying the pile with a base and controlling run-on and run-off, or protecting the pile from precipitation, run-on and free liquids. This is a reasonable approach since the intent of this requirement can be satisfied by either method and the owner or operator is allowed to choose the method most applicable to the facility. It is reasonable to require containment since an uncontained pile of hazardous waste possesses a high potential for contaminating surrounding land and surface water due to discharges of waste and contaminated run-off, and contaminating ground water due to leachate generation. Such contamination would pose a hazard to human health and the environment.

Paragraph G. establishes provisions for closure and post-closure care based on 40 C.F.R. § 265.258. The owner or operator

is required to remove or decontaminate all wastes, residues, and contaminated materials at closure. If this is not possible the owner or operator must close the facility and perform post-closure care in accordance with the closure and post-closure care requirements for landfills (6 MCAR § 4.9420 D.). Since a waste pile is used for treatment or storage under this rule, it is reasonable to require removal or decontamination of waste, residues, and materials at closure as is required of other storage or treatment facilities (surface impoundments, tanks and containers). If, however, after making a reasonable effort, it is found that this is impracticable, the facility becomes a disposal facility, and therefore it is reasonable to subject the facility to the closure and post-closure care requirements for landfills.

6 MCAR § 4.9418 and 4.9419

Rules 6 MCAR §§ 4.9418 and 4.9419 establish standards for existing land treatment facilities. Rule 6 MCAR § 4.9418 contains provisions on applicability, general operating requirements, waste analysis, monitoring, recordkeeping, closure and post-closure, ignitable, reactive and incompatible wastes. Rule 6 MCAR § 4.9419 contains additional requirements for land treatment facilities growing food-chain crops. These rules were taken verbatim from 40 C.F.R. §§ 265.270 - 265.282.



A land treatment facility is a facility, or part of a facility, at which hazardous waste is applied onto or incorporated into the soil surface. It is important to regulate certain aspects of land treatment during interim status because this is a disposal option that presents high potential risks in the absence of certain operational controls. These risks arise from the fact that land treatment involves the direct application of hazardous wastes to the land surface. Typically this occurs in the absence of the type of liner systems associated with landfills or surface impoundments. Unless this practice is carefully defined and regulated, irresponsible parties may try to characterize indiscriminate dumping of waste as land treatment. In addition, since land treatment facilities may be used to grow food-chain crops, the Agency is concerned about the potential for hazardous waste constituents to enter the human food chain. Since under certain conditions crops may be grown on such sites during interim status, it is important to address this concern during the interim status period.

Operators of land treatment facilities generally apply the waste in thin layers and use common farming practices such as tilling, contouring, and erosion control techniques. They may also add nitrogen and phosphorus fertilizers to enhance microbial degradation of the waste. The general objective of land treatment is the microbial degradation of organic waste constituents. As

discussed above, there are certain inherent risks with this practice that make careful regulation necessary. The Agency believes that the only legitimate purpose for the land treatment of hazardous waste is to treat the waste to reduce its hazardous properties. This reduction occurs through biological degradation or chemical reactions in the soil that alter the chemical state of the waste. Although soil has the capacity to effectively filter and dilute waste, these physical mechanisms provide little or no reduction in hazard if they do not alter the chemical state of the waste. Consequently, the use of the soil solely as a filtration or dilution medium is not considered appropriate for land treatment.

To insure that land treatment is used only where appropriate, Paragraph B. specifies that hazardous wastes must not be placed in or on land treatment facilities unless biological degradation or chemical reactions in the soil will make the waste less hazardous. Paragraph B. also requires the owner or operator to design, construct, operate and maintain a run-on control system to prevent flow onto the active portions of the facility, and a run-off management system to collect and control run-off. Such controls are necessary because this disposal option involves the placement of hazardous waste on, or barely under, the surface of the land. Such a technique presents a substantial risk that hazardous waste or hazardous waste constituents will be carried off the site by

surface water runoff. Paragraph B also requires that the wind dispersal of particulate matter be controlled.

Paragraph C. establishes waste analyses requirements in addition to the general requirements imposed by 6 MCAR § 4.9385. Paragraph D. requires the owner or operator to establish the basic monitoring system needed to accurately determine whether the complex processes involved in land treatment are, in fact, occurring, and whether contaminants are migrating from the zone of incorporation to the ground water. The rule requires a combination of soil core and soil-pore water monitoring. This monitoring provides the basis for a mass balance analysis of the unsaturated zone to determine whether the treatment process is meeting the treatment objective. Using the monitoring data as feedback on the performance of a site, an owner or operator can more effectively manipulate operating variables in order to optimize the performance of the site.

Paragraph E. requires owners and operators to keep operating records that include the application dates, and the application rates of each waste placed in the facility. Such recordkeeping is needed to allow the owner or operator and the Agency to evaluate the facility's compliance with the other requirements of this rule. Paragraph F. establishes closure and post-closure requirements and requires the owner or operator to develop and implement a facility closure plan and a post-closure care plan.

Paragraphs G. and H. establish special requirements for

ignitable or reactive wastes and for incompatible wastes. The rule requires the owner or operator to incorporate ignitable or reactive wastes into the soil in such a manner that the resulting waste, mixture, or dissolution of material no longer exhibits ignitable or reactive characteristics. Incompatible waste may not be placed in the same land treatment area unless the land treatment process complies with 6 MCAR § 4.9384 B. The reasonableness of special requirements for these types of wastes is discussed in connection with 6 MCAR §§ 4.9283 at pp. 115-117, supra., and in the EPA background documents on land treatment units listed in Part VIII. and will not be repeated here.

6 MCAR § 4.9419

Rule 6 MCAR § 4.9419 establishes additional requirements if food-chain crops are to be grown at the facility. This rule is identical to 40 C.F.R. § 265.276. The reasonableness of these requirements is discussed at 45 F.R. 33208 (May 19, 1980).

6 MCAR § 4.9420

Rule 6 MCAR § 4.9420 establishes standards for existing landfills used for disposal of hazardous waste. This rule has been adopted directly from 40 C.F.R. § 265.300 - 265.316. Landfilling has historically been the preferred means of disposing of hazardous waste. Until the last decade, some people have acted

as though, once buried, hazardous wastes would cause no more difficulties. Experience has demonstrated the severe human health and environmental impacts which may result from improper landfilling. The problems which hazardous waste landfills have presented can be divided into two broad classes, which these rules attempt to address.

The first class of problems includes fires, explosions, production of toxic fumes, and similar problems resulting from the improper management of ignitable, reactive and incompatible wastes. Methods for dealing with these problems are generally available and can be implemented in the interim status standards without substantial capital expenditures. These methods include the analysis of wastes to provide enough information for their proper management, as required by 6 MCAR § 4.9385; the controlled mixing of incompatible wastes or their segregation into separate landfill cells as required by paragraph F.; and the landfilling of ignitable or reactive wastes only when they are rendered not ignitable or reactive as required by paragraph E. If the waste in the landfill is subject to wind dispersal, the landfill must be managed so that such dispersal is controlled.

The second class of problems relates to the contamination of surface and ground waters. Measures are available which will help reduce the formation of leachate in currently operating landfills. The measures incorporated into these rules are the requirements in paragraph B. on the control of surface water run-on to prevent

flow onto the active face of the landfill to reduce the water available for leachate formation and the collection of rainwater and other runoff from the landfill to control surface water contamination; the requirements in paragraph G. on the treatment of any liquid wastes or semi-solid wastes so that they do not contain free liquids (except for lab-packs); the requirements in paragraph D. for proper closure (including a cover) and post-closure care to control erosion and the infiltration of rainwater; and the requirements in Paragraph H. on crushing or shredding most land-filled containers so that they cannot later collapse and lead to subsidence and cracking of the cover.

Paragraph I. establishes special requirements for the disposal of lab packs which minimize the contribution of liquids from these wastes to landfill leachate. These requirements are further discussed at 46 F.R. 56592 (November 17, 1981).

As indicated above, the language in this rule is taken from the EPA regulations contained in 40 C.F.R., Part 265, Subpart N. In adopting its regulations EPA prepared extensive background documents justifying the reasonableness of its regulations and the Agency is relying on those documents as support for this rule. That information is contained in the discussion at 45 F.R. 33209 - 33215 (May 19, 1980) and in the EPA background documents on landfills listed in Part VIII.

6 MCAR § 4.9421

Rule 6 MCAR § 4.9421 establishes the specific facility requirements for owners and operators of existing facilities which thermally treat hazardous waste. This rule contains provisions on applicability, waste analysis, general operating requirements, monitoring and inspections, closure and open burning. These requirements are based on 40 C.F.R. §§ 265.340 - 265.382. The provisions for incinerators and thermal treatment facilities have been combined to apply to all thermal treatment facilities including incinerators. The reasonableness of the Agency's approach to the regulation of thermal treatment facilities is discussed in connection with proposed rule 6 MCAR § 4.9321, at pp. 240-249, supra. The provisions are based on EPA's regulations and the Agency is relying on the background documents prepared by EPA to support these requirements. This information is contained in the background documents on incinerators and thermal treatment facilities listed in Part VIII. and at 45 F.R. 33215 - 33217 (May 19, 1980).

6 MCAR § 4.9422

Rule 6 MCAR § 4.9422 establishes standards for existing facilities using chemical, physical or biological methods to treat hazardous wastes. This rule contains provisions on applicability,

general operating requirements, waste analysis and trial tests, inspections, closure, ignitable, reactive and incompatible wastes. The language for this rule was taken from 40 C.F.R. §§ 265.400 - 265.406. No comparable rule exists in Chapter Five.

Because there are many different types of possible processes, and because the processes are frequently waste specific, no attempt has been made to develop detailed rules for any particular type of process or equipment. The primary concern of these rules is the safe containment of hazardous waste, hazardous waste constituents, and treatment byproducts through waste analysis, inspections, special attention to the handling of ignitable, reactive or incompatible wastes, and proper closure. In these respects most chemical, physical, and biological treatment operations present the same problems and require essentially the same solutions as tanks. The equipment is typically stationary and fairly large, and the materials used and the problems encountered in that part of the equipment which contains the waste are not dissimilar from the materials used and the problems encountered in constructing tanks. Therefore the tank rules and this rule on chemical, physical and biological treatment are essentially identical and the rationale for this rule and the one on tanks is the same. This rationale is set forth in the discussion of rules 6 MCAR §§ 4.9316 and 4.9415 at pp. 184-186 and 274-275, supra., and in the EPA background documents on chemical, physical and biological treatment facilities listed in Part VIII. and will not be repeated here.



H. Chapter Seven: Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities, 6 MCAR §§ 4.9480 and 4.9481

Chapter Seven consists of those rules which apply to owners and operators of elementary neutralization units, pretreatment units, wastewater treatment units and combustion waste facilities if the facility only treats hazardous waste generated by the owner or operator of the unit or facility. These rules establish facility standards which apply in lieu of the standards established in Chapters Five and Six. This chapter has been developed based on EPA's proposed regulations, 40 C.F.R. Part 266, and the Agency's experience with the hazardous waste program and the pretreatment program.

Facilities that treat hazardous waste influents or generate, treat or store hazardous waste do pose a potential hazard to human health and the environment. Hazardous wastes or constituents thereof may leak or spill from these facilities unless they are properly designed and constructed and are periodically inspected to prevent such occurrences. Persons or livestock may injure themselves if entry into these facilities is not controlled. These facilities may generate toxic mists, fumes, gases, extreme heat or pressure or cause a fire, explosion or violent reaction if improperly managed. Additionally, hazardous wastes left in these

facilities may cause harm if not removed when the facilities are closed.

In addition to being regulated under the state and federal hazardous waste programs, the facilities covered by these rules are regulated under other federal and state regulatory programs. The Agency received a comment from H. B. Fuller regarding the regulation of elementary neutralization units and pretreatment units that discharge to a POTW which has an Agency-approved pretreatment program. H. B. Fuller indicated that regulation under the POTW's pretreatment program would be sufficient and that the Agency should not be directly involved in regulating the unit by establishing discharge standards and monitoring and reporting requirements. The Agency agrees that the pretreatment program does regulate elementary neutralization units and pretreatment units which discharge to a POTW. The Agency believes, however that the focus of those programs is different and that, because of the potential of these facilities to cause environmental harm, regulation under the hazardous waste program is essential and not merely duplicative.

It has also been suggested that the Agency should regulate discharges from NPDES facilities and pretreatment units in a consistent manner rather than exempting NPDES discharges while regulating indirect discharges to POTW's. Although direct discharges from NPDES facilities may pose a risk to the environment,

the Agency believes that the NPDES program is better able to regulate direct discharges since that program was specifically established to do so. The NPDES program is implemented by the Agency through the issuance of permits to discharging facilities. These permits address effluent constituents based on the constituents contained in the influent. Toxicity is assessed through the use of bioassays which are done on samples of effluent. The Agency directly regulated NPDES facilities. The indirect discharges of pretreatment facilities are not directly regulated by the Agency through the pretreatment program. Rather, the receiving POTW regulates the dischargers through a program which is subject to Agency review. Currently the pretreatment program is not well established and is not adequate to address the potential environmental problems that may be raised by the discharging of hazardous waste. Therefore the Agency believes that it is appropriate to regulate such indirect discharges under the hazardous waste program. Since generators who discharge to a POTW without pretreating the waste are required to evaluate their wastes, file a disclosure and have their management plan approved, it is reasonable to subject generators who do pretreat their wastes to the same requirements. Therefore, all wastes discharged to a POTW are subject to the provisions of the hazardous waste rules.

At the same time the Agency believes that because these facilities are regulated under other programs, regulation of the potential hazards posed by these facilities can be accomplished through application of a limited set of special requirements applied through a permit-by-rule. These requirements, which are set forth in 6 MCAR § 4.9481, can be adequately defined in a rule and sufficiently understood and implemented by the regulated community so as to avoid the necessity of individually issued permits. The Agency is convinced that, without sacrificing environmental protection, this permit-by-rule approach will save the regulated community the significant costs involved in applying for an individual permit and will save the Agency significant resources that would be required to issue individual permits. Under this approach, eligible facilities would be deemed to have a hazardous waste permit if they comply with the requirements established in 6 MCAR § 4.9481.

Elementary neutralization units utilize simple and well-understood neutralization processes and treat wastes which are hazardous due solely to corrosivity. Corrosive wastes are readily and easily neutralized and rendered nonhazardous. The resulting nonhazardous waste usually can be discharged to a sewer. Generally, neutralization does not require extensive treatment procedures and the potential for error or facility failure is not great. Also, due to the waste's characteristic, corrosivity, the waste's potential for persistent adverse effects is minimal.

Because elementary neutralization units which treat only waste generated by the units owner or operator possess a lower potential for waste mismanagement and uncontrolled releases of hazardous waste which could cause adverse effects on human health and the environment, the facilities do not need to be subject to full regulation under Chapters Five and Six.

Pretreatment units and wastewater treatment units are regulated under the Clean Water Act, 42 U.S.C. § 1251 et seq., and Agency pretreatment and NPDES programs. These facilities are typically designed and operated to prevent unregulated releases of contaminants into the environment. The discharge from a pretreatment unit generally is diluted in the sewer system, and receives additional treatment by the receiving POTW prior to discharge to the environment. This limits the pretreatment unit's potential for direct discharge of hazardous waste to the environment. The discharge from a pretreatment unit is considered a waste and is subject to regulation under Chapters Two and Three, in addition to regulation under the pretreatment program.

Wastewater treatment units are directly regulated by the NPDES program. Wastewater treatment unit point discharges are exempt from regulation under the hazardous waste program, but are regulated by an NPDES permit. However, the unit itself and wastes such as sludges are subject to regulation under this program. Since wastewater treatment units and pretreatment units are regulated by other Agency programs, and because wastewater

treatment units and pretreatment units which treat only wastes generated by the units owner or operator possess a lower potential for waste mismanagement and uncontrolled releases of hazardous waste to the environment than other hazardous waste treatment facilities, it is reasonable not to subject them to full regulation under Chapters Five and Six.

Combustion waste facilities are also regulated under the provisions of this chapter. Fly ash, bottom ash, slag waste and flue gas emission control waste generated from the combustion of fossil fuels are exempt from regulation under 6 MCAR § 4.9128 C.6. The exemption in 6 MCAR § 4.9128 C.6. is based on the exemption in 40 C.F.R. § 261.4(b)(4).

EPA is currently conducting a study of utility solid waste and the environmental effects of disposal of these wastes. However, until such time as the study is completed, EPA has interpreted the fly ash exemption to also include wastes produced in conjunction with the combustion of fossil fuels which are necessarily associated with the production of energy and are co-treated or co-disposed with the wastes listed in 40 C.F.R. § 261.4(b)(4). This interpretation is contained in EPA memorandum on the Regulation of Utility Waste, dated February 8, 1981 which is listed in Part VIII. The Agency, after reviewing the federal exemption and interpretation, and the current management techniques for these wastes, does not agree with EPA that these wastes should be exempt because of this waste's potential for

adversely affecting human health and the environment if improperly managed. The Agency does agree that energy production facilities handling hazardous wastes produced in conjunction with the combustion of fossil fuels should not be subject to full regulation under Chapters Five and Six while the study is being conducted and has determined that permit-by-rule is sufficient. Once EPA has completed their study and issued a final determination regarding such facilities, the Agency will review the documents and consider amending the rule accordingly.

This provision for regulation by permit-by-rule is limited to energy production facilities that manage hazardous wastes, which are generated on-site by coal combustion, by mixing the waste with and co-disposing or co-treating it with fly ash, bottom ash, boiler slag or flue gas emission control waste. Many of these hazardous wastes, such as boiler cleaning solutions, are generated on an infrequent basis. Due to the large volume of fly ash and other combustion wastes generated, the relative volume of hazardous waste in the total mixture is small. The resulting waste is non-hazardous and has a low potential for adverse effects on human health and the environment. If these facilities were not exempted from the facility standards of Chapters Five and Six, most facilities would need to be retro-fitted and new treatment facilities would need to be designed and constructed. These management practices have been in use for many years. The Agency

is unaware of any significant environmental or human health problems caused by these practices. Therefore, the Agency believes that the result of regulating these facilities under Chapters Five and Six would be to significantly increase facility costs while not necessarily providing any significant environmental benefit. Therefore, it is reasonable to regulate these facilities under a permit-by-rule until facts are developed which indicate that this is not a reasonable approach.

The Agency has limited the application of this permit-by-rule to units or facilities that treat only the wastes generated by the owner or operator of the unit or facility. Facilities that receive hazardous waste from other generators possess a higher potential for causing adverse effects on the environment and human health because the operator lacks control over the generation and content of the wastes to be treated. Facilities that receive wastes from generators other than the facility owner or operator require regulation on waste analysis, acceptability of waste for treatment by the unit, effectiveness of treatment, and specific operating requirements based on the type of unit and the types of waste. Since this chapter does not contain the requirements necessary to effectively regulate facilities which treat other generator's wastes, such as waste analysis and specific operating requirements, it is reasonable to regulate these facilities through Chapters Five and Six rather than this chapter.



6 MCAR § 4.9481

Rule 6 MCAR § 4.9481 contains basic facility standards for elementary neutralization units, pretreatment units, wastewater treatment units and combustion waste facilities.

Paragraph A. requires the owner or operator of an eligible facility to obtain an identification number. This requirement is intended to provide the Agency with a listing of the hazardous waste treatment and storage facilities that are covered by the provisions of this chapter.

Paragraph B. requires the owner or operator of an eligible facility to prevent the unknowing entry and minimize the possibility of unauthorized entry of persons or livestock onto the eligible facility. This requirement is intended to prevent or minimize the harm to people or livestock that could result from direct contact with hazardous wastes. It is also intended to reduce the possibility of tampering with the treatment processes and thereby causing spills, process upsets, or damage to the treatment equipment. The Agency has not mandated any specific security requirements in order to provide flexibility and avoid imposing requirements which might be inappropriate for the many varied settings in which eligible facilities are found. The proposed provision, therefore, is expressed as a performance standard, and the method of compliance with the standard is left to the reasonable judgment of the owner or operator of an eligible facility.

Paragraph C. requires the owner or operator of an eligible facility to periodically inspect the unit or facility for malfunctions, deterioration and any other condition that is or could cause leaks, spills or other unauthorized releases of hazardous waste to the environment. The owner or operator must also develop and maintain a written inspection plan and record those inspections in an inspection log. Finally, the owner or operator must immediately remedy any deterioration or malfunction of equipment or structures. The intent of these requirements is to prevent or minimize leaks, spills or other unauthorized releases of hazardous wastes. To avoid inflexible requirements, and because an inspection plan that is tailored to the type of facility is more likely to reduce the situations that will result in unauthorized releases, the design of the inspection plan is left to the reasonable judgment of the owner or operator.

Paragraph D. requires the owner or operator of an eligible facility to ensure that the treatment of hazardous waste in the facility is conducted so that it does not cause conditions such as the generation of extreme heat or pressure; fire; explosions; violent reactions; toxic fumes, mists or gases; conditions that damage the structural integrity or equipment of the facility or unit; or conditions that otherwise threaten human health or the environment. The intent of this provisions is to prevent hazards that can result from the management of ignitable, reactive, corrosive and incompatible wastes.

Paragraph E. requires the owner or operator of an eligible facility to complete the manifests for hazardous wastes the owner or operator receives from off-site sources and to investigate and report manifest discrepancies and unmanifested shipments. The owner or operator must also maintain an operating record, submit an annual report with respect to hazardous wastes received from off-site sources, and report spills. These provisions ensure that the manifest and reporting system remains intact for hazardous wastes transported to off-site treatment facilities and provide the Agency with knowledge of situations which may cause substantial hazard to human health or the environment so that the Agency can take appropriate action.

Paragraph F. requires owners or operators of eligible facilities to remove all hazardous wastes and hazardous waste residues from the facility at closure. The closure requirement is reasonable because it ensures that hazardous waste is not left in units which are not in operation and are, therefore, not being safely managed. However, since combustion waste facilities contain waste mixtures which may no longer be hazardous, it is reasonable to require that the waste from these facilities be analyzed and to allow the Director to determine which closure requirements apply.

Paragraph G. provides that the treated wastes are subject to regulation under Chapters Two and Three. This requirement is reasonable because the management of these wastes should be based on their characteristics and on whether they are hazardous or nonhazardous wastes. This requirement ensures proper management.

H. Chapter Eight: County Regulation of Hazardous Waste Management, 6 MCAR §§ 4.9559 and 4.9560

The proposed rules in Chapter Eight set forth the procedures for the Agency's oversight of county hazardous waste programs. This chapter contains provisions from existing hazardous waste rule 6 MCAR § 4.9009.

6 MCAR § 4.9559

Rule 6 MCAR § 4.9559 is informational and provides the reader with the applicability of specific subparagraphs within 6 MCAR § 4.9560. Although the language is different it serves the same function as existing rule 6 MCAR § 4.9009 A.

6 MCAR § 4.9560

Rule 6 MCAR § 4.9560 sets forth the procedures used by the Agency in its overview of county hazardous waste programs. Paragraph A. outlines the scope of the Agency's overview authority as set forth in Minn. Stat. §§ 400.161 and 473.811, subd. 5b.

Paragraph B. is renumbered existing rule 6 MCAR § 4.9009 B. This rule has been amended to incorporate the amendments to §§ 400.161 and 473.811, subd. 5b., contained in 1981 Minn. Laws, ch. 352 §§ 30 and 47. The amendments also incorporate a delegation of authority from the Agency to the Agency Director which has been in effect for several years. Because the Agency

only meets once a month and the agenda is established 10 days before the meeting, it is impossible in many cases for the Agency to act on county ordinances within the proscribed statutory period. Since the Director conducts the day to day operations of the Agency, it is reasonable for the Director to perform this function if the ordinance is to be approved and to suspend an ordinance to enable consideration by the Agency if rejection appears appropriate. This paragraph also provides the procedure the Agency shall follow for the suspension of a previously-approved county ordinance or portion of an ordinance.

Paragraph C. is renumbered existing rule 6 MCAR § 4.9009 C. The language contained in C.1. has been amended for the purposes of clarity and to be consistent with the terminology used in 6 MCAR §§ 4.9100 - 4.9481. Subparagraph C.2. of the existing rule has been deleted. As a result copies of manifests (shipping papers) are no longer submitted to the county in lieu of the Agency. Instead, all manifests will be sent to the Director as required by 6 MCAR § 4.9213. This change was necessary to assure EPA that the state hazardous waste program will be equivalent to the federal program with respect to manifest distribution. Existing rule 6 MCAR § 4.9009 C.3. has been renumbered as 6 MCAR § 4.9560 C.2. and incorporates minor changes in language for the purposes of clarity and to be consistent with terminology used in 6 MCAR §§ 4.9100 - 4.9481.

Paragraph D. is existing rule 6 MCAR § 4.9009 D. The language contained in this paragraph has been amended in order to be consistent with Minn. Stat. §§ 400.161 and 473.811, subd. 5b., and for the purposes of clarity.

I. Repealers

Rules 6 MCAR §§ 4.9004, 4.9006 I., 4.9008 and 4.9010 and the Appendices to the existing rules are being repealed.

Rule 6 MCAR § 4.9004 governs the location, operation and closure of a hazardous waste facility. This subject is addressed by the proposed rules in Chapter Five. The proposed rules are more comprehensive than the existing rules and retaining the existing rules would be redundant.

Rule 6 MCAR § 4.9006 I. sets forth the persons and/or facilities which are not required to have a hazardous waste facility permit. These exemptions are now covered by proposed rules 6 MCAR §§ 4.9128 C., 4.9129 and 4.9280. Retaining the existing rule would be redundant.

Rule 6 MCAR § 4.9008 governs the use of hazardous waste shipping papers. The provisions of this rule are now contained in proposed rules 6 MCAR §§ 4.9212, 4.9213, 4.9255, 4.9256 and 4.9257 and retaining this rule would be redundant.

Rule 6 MCAR § 4.9010 covers spillages and leakages of hazardous waste. The provisions of this rule are now contained in

proposed rule 6 MCAR § 4.9259 and in the proposed rules in Chapters Five and Six. Retaining this rule would also be redundant.

Because the provisions of these rules are covered in the proposed rules, the existing rules are no longer needed. It is therefore reasonable to repeal these rules.

#### VI. CONSIDERATION OF SMALL BUSINESS

Minn. Laws 1983, ch. 188 (to be codified as Minn. Stat. § 14.115) requires state agencies, when proposing amendments to existing rules which may affect small businesses, to consider the following methods for reducing the impact of the rule on small businesses:

- (a) the establishment of less stringent compliance or reporting requirements for small businesses;
- (b) the establishment of less stringent schedules or deadlines for compliance or reporting;
- (c) the consolidation or simplification of compliance or reporting requirements for small businesses;
- (d) the establishment of performance standards for small businesses to replace design or operational standards required in the rule; and
- (e) the exemption of small businesses from any or all requirements of the rule.

The act requires agencies to incorporate into proposed amendments any of these methods that it finds to be feasible, unless doing so would be contrary to the statutory objectives that are the basis of the proposed rulemaking.

In drafting the proposed amendments to the hazardous waste rules, the Agency did give consideration to small businesses. The rules as revised provide consideration for small business consistent with items (b), (d) and (e) above. Where possible, Chapters Five and Six provide performance standards for facilities which can be applied on a site specific basis. Because the rules do not specify the actual design and operational details, it is possible for small businesses to develop facilities which are appropriate to their size and needs. For example, 6 MCAR § 4.9281 D. of the proposed rules requires security measures to prevent the unknowing or unauthorized entry of the facility. However, the actual security measures will depend on the type of facility and may be much less extensive for a small business than for a large commercial facility.

The proposed rules also provide for a complete exemption from the facility requirements if all hazardous waste is removed from the site within 90 days. This exemption is especially relevant to small businesses which may only store hazardous wastes prior to shipment to a disposal facility. The rule provides for such storage without obtaining a permit in order to minimize the burden



on those generators which are only storing wastes for short periods and are not maintaining actual storage facilities.

A phased schedule is provided in 6 MCAR § 4.9312 B. to lessen the burden on small businesses which must obtain liability insurance. Small businesses which must obtain insurance are granted a longer period of time after the effective date of the rule to obtain the necessary insurance than are large businesses. The actual time allowance is based on the annual sales or revenues of the owner or operator and allow small businesses up to 30 months after the effective date of the rules to obtain insurance.

The Agency actively sought input from the regulated community during the drafting of the proposed amendments to the hazardous waste rules. This activity is discussed at pp. 12-13, 21-23. Many comments were received during this process and the rules were redrafted to take many of those comments into account.

However, the objective of Minn. Stat. ch. 116 is to protect the public health and welfare and the environment from the adverse effects which will result when hazardous waste is mismanaged. Therefore, except for the limited exemptions provided for small quantity generators, applying less stringent requirements to the hazardous waste generated by small businesses, irrespective of quantity, would be contrary to the Agency's mandate.

The Agency believes that the proposed amendments to the hazardous waste rules address the concerns of small business to the maximum extent possible without acting contrary to the statutory goal of environmental protection.

VII. CONCLUSION

The Agency staff has, in this document and its exhibits, made its presentation of facts establishing the need for and reasonableness of the proposed amendments to the hazardous waste rules, 6 MCAR §§ 4.9100 - 4.9560. This document constitutes the Agency's Statement of Need and Reasonableness for the proposed amendments to the hazardous waste rules.

Part VIII. LIST OF EXHIBITS

In compiling the proposed amendments to the hazardous waste rules, the Agency relied on documents prepared by EPA to explain the reasoning and supportive data used in developing EPA's hazardous waste regulations and on the information published in the Federal Register in conjunction with the publication of the EPA regulations. The following documents were utilized by Agency staff in developing these rules and are relied on by the Agency as further support for the reasonableness of a 6 MCAR §§ 4.9100 - 4.9560. The documents are listed by chapter and some documents may be listed in connection with more than one chapter. These documents are available for review at the Agency's office at 1935 West County Road B-2, Roseville, Minnesota 55113.

MPCA

EX. NO.

TITLE

A. General

- 1 U.S.E.P.A. Background Document: Regulatory Analysis, April 30, 1980

B. Chapter One

- 2 U.S.E.P.A. Background Document: Definitions and Provisions of Confidentiality (Part 260) April, 1980

MPCA  
EX. NO.

TITLE

- |   |                   |                   |  |
|---|-------------------|-------------------|--|
| 3 | Federal Register: |                   |  |
|   | 45 F.R. 33066     | May 19, 1980      | 40 C.F.R. §§ 260.1 -<br>260.22 Hazardous<br>Waste Management<br>System   |
| 4 | 45 F.R. 72024     | October 30, 1980  | 40 C.F.R. § 260.10<br>Definitions: Generator<br>and Transport Vehicle,<br>Vessel   |
| 5 | 45 F.R. 76618     | November 19, 1980 | 40 C.F.R. § 260.10<br>Definitions: Spills  |
| 6 | 46 F.R. 2344      | January 9, 1981   | 40 C.F.R. § 260.10<br>Definitions: Existing<br>Portion   |
| 7 | 47 F.R. 32289     | July 26, 1982     | 40 C.F.R. § 260.10<br>Definitions: Certification,<br>Existing Portion,<br>Hazardous Waste<br>Constituent, Treatment<br>Zone, Uppermost Aquifer |

C. Chapter Two

- |    |   |                                |                           |
|----|---|--------------------------------|---------------------------|
| 8  | U.S.E.P.A. Background Document: Criteria for Identifying<br>Characteristics of Hazardous Waste (§ 261.10); Criteria<br>for Listing Hazardous Waste (§ 261.11); Petitions to Amend<br>Part 261 to Exclude a Waste Produced at a Particular<br>Facility (§ 260.22) April 30, 1980 |                                |                           |
| 9  | U.S.E.P.A. Background Document:   | Characteristic of Corrosivity  | (Part 261.22) May 2, 1980 |
| 10 | U.S.E.P.A. Background Document:   | Characteristic of Ignitability | (Part 261.21) May 2, 1980 |
| 11 | U.S.E.P.A. Background Document:   | Characteristic of Reactivity   | (Part 261.23) May 2, 1980 |
| 12 | U.S.E.P.A. Background Document:   | EP Toxicity Characteristic     | (Part 261.24) May 2, 1980 |

<u>MPCA</u> <u>EX. NO.</u>	<u>TITLE</u>
13	U.S.E.P.A. Background Document: Listing of Hazardous Waste; Finalization of May 19, 1980 Hazardous Waste List (Parts 261.31 and 261.32), November 14, 1980
14	U.S.E.P.A. Background Document: Listing of Hazardous Waste: Finalization of July 16, 1980 Hazardous Waste List (Parts 261.31 and 261.32), January 12, 1981
15	Appendix A - Health and Environmental Profiles, October 30, 1980
16	Appendix B - Fate and Transport of Hazardous Constituents, May 2, 1980
17	U.S.E.P.A. Background Document: Hazardous Waste from Discarding of Commercial Chemical Products and the Containers and Spill Residues Thereof (Part 261.33) April 30, 1980
18	U.S.E.P.A. Background Document: Degree of Hazard, April, 1980
19	Letter from Economics Laboratory dated July 30, 1982 with attachment: Ocular Irritancy Responses to Various pHs of Acids and Bases With and Without Irrigation, Toxicology 23(1982) pp. 281-291
20	Letter from Minnesota Association of Commerce and Industry dated December 31, 1982 with attachment: - Ocular Irritancy Responses to Various pHs of Acids and Bases With and Without Irrigation; Toxicology 23(1982) pp. 281-291 - A Systematic Comparison of Chemically Induced Eye Injury in the Albino Rabbit and Rhesus Monkey; W.R. Green, et al. - Evaluation of the Cutaneous-Irritation Potential of 56 Compounds, Fd.; Chem. Tox. Vol. 20 pp. 563-572, 1982
21	U.S.E.P.A. Report to Congress; Listing Waste Oil as a Hazardous Waste, Excerpt pages 1-3, 1981
Federal Register:	
3	45 F.R. 33084 May 19, 1980 40 C.F.R. §§ 261.1 - 261.33 Identification and Listing of Hazardous Waste

<u>MPCA</u> <u>EX. NO.</u>	<u>TITLE</u>		
22	45 F.R. 47832	July 16, 1980	40 C.F.R. §§ 261-31 - 261.32 Identification and Listing of Hazardous Waste: Specific and Nonspecific Sources
23	45 F.R. 72035	October 30, 1980	40 C.F.R. §§ 261.4 Exclusions; 40 C.F.R. § 261.32 Waste Streams
4	45 F.R. 72024	October 30, 1980	40 C.F.R. § 261.4 Exclusions: Wastes Generated in Storage Tanks, Transport Vehicle, Vessel or Manufacturing Unit.
24	45 F.R. 74884	November 12, 1980	40 C.F.R. §§ 261.30 - 261.32 Identification and Listing of Hazardous Waste
5	45 F.R. 76618	November 19, 1980	40 C.F.R. § 261.4 Exclusions: Mining Waste and Cement Kiln Dust; and § 261.5 Small Quantity Generators
25	45 F.R. 78524	November 25, 1980	40 C.F.R. §§ 261.7 Empty Containers, and 261.33 Container Residues
26	45 F.R. 80286	December 4, 1980	40 C.F.R. § 261.4 Exclusions: Wastes Generated in Storage Tanks, Transport Vehicle, Vessel or Manufacturing Unit
27	46 F.R. 4614	January 16, 1981	40 C.F.R. §§ 261.31 Identification and Listing of Hazardous Waste: Nonspecific Sources
28	46 F.R. 44969	September 8, 1981	40 C.F.R. § 261.6 Reuse, Recycle

<u>MPCA</u> <u>EX. NO.</u>	<u>TITLE</u>	
29	46 F.R. 47426	September 25, 1981 40 C.F.R. § 261.4 Exclusions: Samples
30	46 F.R. 56582	November 17, 1981 40 C.F.R. § 261.3 Definitions Hazardous Waste
31	47 F.R. 36092	August 18, 1982 40 C.F.R. § 261.7 Empty Containers
D. <u>Chapter Three</u>		
32	U.S.E.P.A. Background Document: Special Requirements for Hazardous Waste Generated by Small Quantity Generators (Part 261.5) April 28, 1980	
Federal Register:		
33	43 F.R. 58971	December 18, 1978 40 C.F.R. Part 250, Subpart B. renumbered as 40 C.F.R. Part 262: Generator Standards
34	45 F.R. 12724	February 26, 1980 40 C.F.R. §§ 262.10 - 262.51 Generator Standards
3	45 F.R. 33084	May 19, 1980 40 C.F.R. Part 261 Identification and Listing of Hazardous Waste
3	45 F.R. 33140	May 19, 1980 40 C.F.R. §§ 261.10 - 262.51 Generator Standards
5	45 F.R. 76618	November 19, 1980 40 C.F.R. § 261.5 Small Quantity Generators
25	45 F.R. 78524	November 25, 1980 40 C.F.R. § 262.51 Farmers: Triple Rinsing
35	47 F.R. 1248	January 11, 1982 40 C.F.R. § 262.34 Accumulation Time

MPCA  
EX. NO.

TITLE

E. Chapter Four

Federal Register:

- |    |               |                   |  |
|----|---------------|-------------------|--|
| 3  | 45 F.R. 33150 | May 19, 1980      | 40 C.F.R. §§ 263.10 -<br>263.31 Transporter<br>Standards                               |
| 36 | 45 F.R. 86966 | December 31, 1980 | 40 C.F.R. § 263.12<br>Transfer Facility<br>Requirements                                |
| 37 | 45 F.R. 86970 | December 31, 1980 | 40 C.F.R. §§ 263.20 &<br>263.2 Transportation<br>Standards: Rail and<br>Bulk Shipments |

F. Chapters Five and Six

- |    |   |  |  |
|----|---|--|--|
| 38 | U.S.E.P.A. Background Document: General Facility Standards:<br>General Waste Analysis and Interim Status Standards for<br>General Waste Analysis (Parts 264.13 and 265.13)<br>December 30, 1980   |  |  |
| 39 | U.S.E.P.A. Background Document: General Facility Standards:<br>Standards of Security (Part 264.14); Interim Status<br>Standards for Security (Part 265.14) April 29, 1980                         |  |  |
| 40 | U.S.E.P.A. Background Document: General Facility Standards:<br>Standards for Personnel Training (Part 264.16);<br>Interim Status Standards for Personnel Training<br>(Part 265.16) April 29, 1980 |  |  |
| 41 | U.S.E.P.A. Background Document: General Facility Standards<br>for Location of Facilities (Part 264.18)<br>December 30, 1980   |  |  |
| 42 | U.S.E.P.A. Background Document: General Facility Standards:<br>Preparedness and Prevention; Contingency Plan Emergency<br>Procedures, April, 1980   |  |  |
| 43 | U.S.E.P.A. Background Document: General Facility Standards:<br>Manifest System, Recordkeeping, and Reporting (Part<br>264 and Part 265) April, 1980   |  |  |

<u>MPCA</u> <u>EX. NO.</u>	<u>TITLE</u>
44	U.S.E.P.A. Background Document: Groundwater Monitoring (Part 265) May 2, 1980
45	U.S.E.P.A. Background Document: Permitting of Land Disposal Facilities; Ground Water Protection Standard (Part 264 Subpart F) July 31, 1981
46	U.S.E.P.A. Background Document: Permitting of Land Disposal Facilities; Ground Water and Air Emission Monitoring (Part 264 Subpart F) July 31, 1981
47	U.S.E.P.A. Background Document: Interim Status Standards and General Status Standards for Closure and Post-Closure Care (Parts 264 and 265 Subpart G) December 31, 1980
48	U.S.E.P.A. Background Document: Interim Status Financial Requirements (Part 265) April 25, 1980
49	U.S.E.P.A. Background Document: Parts 264 and 265, Subpart H. Financial Requirements, Final Regulations, December 31, 1980
50	U.S.E.P.A. Background Document: Interim Status Standards for the Use and Management of Containers (Part 265); Interim Status Standards for Waste Piles (Part 265) April, 1980
51	U.S.E.P.A. Background Document: Interim Status Standards for Tanks (Part 265); Interim Status Standards for Chemical, Physical and Biological Treatment (Part 265) April 29, 1980
52	U.S.E.P.A. Background Document: Interim Status Standards for Land Treatment Facilities (Part 265) April 30, 1980
53	U.S.E.P.A. Background Document: Interim Status Standards for Landfills (Part 265) May 2, 1980
54	U.S.E.P.A. Background Document: Interim Status Standards for Hazardous Waste Incineration (Part 265) April, 1980
55	U.S.E.P.A. Background Document: Interim Status Standards for Hazardous Waste Facilities for Thermal Treatment Processes Other than Incineration and Open Burning (Part 265) April, 1980



<u>MPCA</u> <u>EX. NO.</u>	<u>TITLE</u>
56	U.S.E.P.A. Background Document: Standards for Inspection (Part 264.15); Interim Status Standards for Inspection (Part 265.15) April, 1980
57	U.S.E.P.A. Background Document: Section 265.220 Final Interim Status Standards for Surface Impoundments, April 28, 1980
58	U.S.E.P.A. General Issues Concerning Interim Status Standards, April, 1980
59	U.S.E.P.A. Background Document: Incineration Standards (Parts 264 and 265) December, 1980
60	U.S.E.P.A. Background Document: Parts 264 and 265 Subpart H. Interim Final Regulations on Closure and Post-Closure Insurance November 2, 1981
61	U.S.E.P.A. Background Document: Parts 264 and 265 Subpart H. Financial Requirements, Financial Test and Municipal Revenue Test Financial Assurance for Closure and Post-Closure Care, including Appendices A and B, November 30, 1981
62	U.S.E.P.A. Background Document: Parts 264 and 265 Subpart H. Financial Requirements, Financial Test for Liability Coverage, including Appendix, April 9, 1982
63	U.S.E.P.A. Background Document: Incineration Standards: Parts 264 and 265, Subpart O, June 1982
64	U.S.E.P.A. Background Document: Preliminary Cost Analysis for Part 264 Interim Final Standards for Tanks (Subparts G, H, J) February 1981
65	U.S.E.P.A. Background Document: Preliminary Cost Analysis for Part 264 Interim Final Standards for Waste Piles (Subparts G, H, L) February 1981
66	U.S.E.P.A. Background Document: Interim Status and General Standards for Tanks: Interim Status Standards for Chemical, Physical, and Biological Treatment (Subparts J and December 30, 1980
67	U.S.E.P.A. Background Document: Permitting of Land Disposal Facilities; Overview July 31, 1981

<u>MPCA</u> <u>EX. NO.</u>	<u>TITLE</u>
68	U.S.E.P.A. Background Document: General Comments on Storage; Standards for the Use and Management of Containers; Standards for Waste Piles (Subparts I and L) December 30, 1980
69	U.S.E.P.A. Background Document: Permitting of Land Disposal Facilities; Waste Piles (Subpart L) July 31, 1981
70	U.S.E.P.A. Background Document: Permitting of Land Disposal Facilities; Surface Impoundments (Subpart K) July 31, 1981
71	U.S.E.P.A. Background Document: Permitting of Land Disposal Facilities; Land Treatment (Subpart M) July 31, 1981
72	U.S.E.P.A. Background Document: Permitting of Land Disposal Facilities; Performance Standards for Land Disposal Facilities (Subpart M and N) July 31, 1981
73	U.S.E.P.A. Background Document: Permitting of Land Disposal Facilities; Landfills (Subpart N) July 31, 1981
74	U.S.E.P.A. Background Document: Interim Status Standards for Landfills; Special Requirements for Ignitable or Reactive Wastes (Subpart N, Part 265.312) February 20, 1981
75	U.S.E.P.A. Background Document: Proposed Additions to Standards for Hazardous Waste Incineration (Part 264.34 Subpart O) January 1981
76	U.S.E.P.A. Background Document: Permitting of Land Disposal Facilities; Information Requirements for Permitting Discharges July 31, 1981
77	U.S.E.P.A. National interim primary drinking water regulations, Excerpt pages 51-64, 69-80, 103-119, 1976
78	Hydrology Guide for Minnesota - Getting the Most Out of Your Raindrop, U.S. Agriculture Department, Soil Conservation Services, St. Paul, MN

MPCA  
EX. NO.

TITLE

79      Comments of the Environmental Defense Fund and The Crum  
         and Forster Insurance Companies on Financial Assurance  
         Requirements for Corrective Action.    November 22, 1982

Federal Register:

3	45 F.R. 33154	May 19, 1980	40 C.F.R. Parts 264-265 Facility Standards
80	45 F.R. 66816	October 8, 1980	40 C.F.R. Part 264 Facility Standards: Ground Water Protection
81	45 F.R. 76630	November 19, 1980	Eligibility for Interim Status
82	45 F.R. 82964	December 17, 1980	40 C.F.R. Part 264 and 265 Availability of Information
36	45 F.R. 86966	December 31, 1980	40 C.F.R. §§ 264.71 and 265.71
83	46 F.R. 2802	January 12, 1981	40 C.F.R. Parts 264 and 265 Facility Standards: General
84	46 F.R. 7666	January 23, 1981	40 C.F.R. Parts 264 and 265 Facility Standards: Incinerators
85	46 F.R. 1126	February 5, 1981	40 C.F.R. Parts 264 and 265 Land Disposal Facilities
86	46 F.R. 38314	May 26, 1981	40 C.F.R. Parts 264 and 265 Land Disposal Facilities
87	46 F.R. 33502	June 29, 1981	40 C.F.R. Part 265 Interim Status Standards

<u>MPCA</u> <u>EX. NO.</u>	<u>TITLE</u>		
88	46 F.R. 55110	November 6, 1981	40 C.F.R. Parts 264 and 265 Container and Waste Pile Standards
30	46 F.R. 56592	November 17, 1981	40 C.F.R. § 265.316 Disposal of Lab-Packs
89	47 F.R. 8304	February 25, 1982	40 C.F.R. § 264.1 Exemption: Absorbents
90	47 F.R. 15032	April 7, 1982	40 C.F.R. Parts 264 and 265; Financial Assurance
91	47 F.R. 16544	April 16, 1982	40 C.F.R. Parts 264 and 265 Liability Requirements
92	47 F.R. 27520	June 24, 1982	40 C.F.R. Parts 264 and 265 Incinerator Standards
93	47 F.R. 32274	July 26, 1982	40 C.F.R. Parts 264 and 265 Facility Standards: Ground Water and Land Disposal Facilities

Chapter Seven

Federal Register:

94	45 F.R. 76074	November 17, 1980	Elementary Neutralization Unit and Wastewater Treatment Units
95	45 F.R. 76076	November 17, 1980	Elementary Neutralization Unit and Wastewater Treatment Units
96	U.S.E.P.A. Memorandum on EPA Regulation of Utility Waste, February 8, 1981 with attached letter to Paul Emler Jr. from N. Dietrick dated January 13, 1981		

MPCA  
EX. NO.

TITLE

97

- Comments Received in Response to the March 30, 1981 and June 15, 1981 Notices of Intent to Solicit Outside Opinion
- A. April 17, 1981 letter from Minnesota/Wisconsin Power Suppliers
  - B. April 17, 1981 letter from Otter Tail Power
  - C. April 29, 1981 letter from 3M
  - D. July 7, 1981 letter from G. Robert Johnson
  - E. September 8, 1981 letter from NSP
  - F. September 8, 1981 letter from Union Scrap & Metal Co.
  - G. September 9, 1981 letter from Otter Tail Power
  - H. September 15, 1981 letter from Fabri-Tek
  - I. September 16, 1981 letter from Buckbee-Mears Co.
  - J. September 22, 1981 letter from Otter Tail Power
  - K. September 23, 1981 letter from United States Steel Corp.
  - L. September 23, 1981 letter from Sierra Club
  - M. September 24, 1981 letter from American Crystal Sugar Co.
  - N. September 25, 1981 letter from Minn. Automobile Dealers Assoc.
  - O. September 29, 1981 letter from University of Minnesota
  - P. September 28, 1981 letter from H. B. Fuller Co.
  - Q. September 30, 1981 letter from Northwest Petroleum Assoc.
  - R. September 30, 1981 letter from Minnesota Service Station Assoc.

MPCA  
EX. NO.            TITLE

(Exhibit 97 continued)

- S. October 6, 1981 letter from Burlington Northern
  - T. October 7, 1981 letter from Economics Laboratory
  - U. November 16, 1981 letter from Sierra Club
  - V. November 20, 1981 letter from University of Minnesota
  - W. December, 1981 letter from Buckbee-Mears Co.
  - X. December 29, 1981 letter from Popham, Haik, Schnobrich, Kaufman & Doty
  - Y. December 28, 1981 letter from Minnesota/Wisconsin Power Suppliers
  - Z. December 29, 1981 letter from Minnesota Railroads Assoc.
  - AA. December 29, 1981 letter from MACI
  - BB. January 11, 1982 letter from Anoka County
  - CC. January 14, 1982 letter from Hennepin County
  - DD. January 25, 1982 comments of Izaak Walton League
  - EE. February 1, 1982 letter from Kleer-Flo Co.
  - FF. February 18, 1982 letter from Popham, Haik, Schnobrich, Kaufman & Doty
- 98            Comments Received in Response to the Notice to Solicit Outside Opinion Published in the December 20, 1982 State Register:
- A. January 18, 1983 memorandum from Gary L. Englund, Dept. of Health
  - B. January 24, 1983 memorandum from Gilbert Gabanski, Dept. of Natural Resources (DNR)
  - C. February 14, 1983 memorandum from Tom Balcom, DNR
  - D. March 22, 1983 letter from Nicollet County

MPCA  
EX. NO.

TITLE

(Exhibit 98 continued)

- E. April 7, 1983 letter from Earl Gran
- F. April 8, 1983 letter from Robert Brewster
- G. April 22, 1983 memorandum from Tom Balcom, DNR
- H. April 28, 1983 memorandum from Michael Convery, Dept. of Health
- I. May 31, 1983 letter from McCombs-Knutson Associates, Inc.

MPCA  
EX. NO.

TITLE

99

- Comments and Hearing Requests Received in Response to the Notice of Intent to Adopt Rules Without a Public Hearing Published in October 24, 1983 State Register
- A. October 31, 1983 letter from Terence H. Cooper
  - B. November 2, 1983 letter from Thomas A. Fait
  - C. November 3, 1983 letter from Metropolitan Inter-County Association
  - D. November 8, 1983 letter from G. W. Harries
  - E. November 14, 1983 memorandum from Betsy Parker MN DOT
  - F. November 15, 1983 letter from Imperial, Inc.
  - G. November 15, 1983 letter from MACI
  - H. November 15, 1983 comments from the National Association of Recycling Industries, Inc.
  - I. November 18, 1983 letter from Robert S. Burk
  - J. November 22, 1983 letter from Land O'Lakes, Inc.
  - K. November 22, 1983 letter from Atwater McMillian, Inc.
  - L. November 22, 1983 letter from McLaughlin Gormley King Co.

MPCA  
EX. NO.            TITLE

(Exhibit 99 continued)

- M. November 23, 1983 letter from MN DOT
- N. November 23, 1983 letter from Minnesota Petroleum Council
- O. November 23, 1983 letter from NSP
- P. November 23, 1983 letter from Minnesota Plant Food and Chemical Association
- Q. November 23, 1983 letter from Ramsey County
- R. November 25, 1983 letter from The Outdoors Committee
- S. November 9, 1983 letter from 3M
- T. December 5, 1983 letter from Dakota County
- U. December 6, 1983 letter from Burlington Northern

HEARING REQUESTS

- V. Two Petitions for Hearing, each with 20 signatures
- W. Two Petitions from Mel Davis dated November 10, 1983
- X. November 14, 1983 letter from H. B. Fuller Company
- Y. November 15, 1983 letter from the Carver County LPRC
- Z. November 15, 1983 letter from the Marshall County LPRC
- AA. November 17, 1983 letter from Richard J. Eischens
- BB. November 17, 1983 letter from Anoka County
- CC. November 21, 1983 letter from Scott County
- DD. November 21, 1983 letter from David W. Hanson



MPCA  
EX. NO.                      TITLE

(Exhibit 99 continued)

- EE. November 21, 1983 letter from Richard C. Nash
- FF. November 21, 1983 letter from Richard R. Koehn
- GG. November 21, 1983 letter from Carver County
- HH. November 22, 1983 letter from H. B. Fuller Company
- II. November 22, 1983 letter from William Masberg
- JJ. November 22, 1983 letter from Minnesota Hospital Association
- KK. November 22, 1983 letter from Scott County
- LL. Seven letters dated November 22, 1983 from the Hennepin County Commissioners
- MM. Five letters dated November 22, 1983 from the Hennepin County Department of Environment and Energy
- NN. November 22, 1983 letter from the Hennepin County Bureau of Public Service
- OO. November 23, 1983 letter from Metalcasters of Minnesota
- PP. November 23, 1983 letter from MACI
- QQ. Three letters dated November 23, 1983 from Stolpestad, Brown and Smith
- RR. November 23, 1983 letter from Popham, Haik, Schnobrich, Kaufman & Doty, Ltd.
- SS. December 5, 1983 letter from the Private Property Rights Alliance
- TT. Undated letter from DeAnn Croatt

Dated: January 12, 1984

  
SANDRA S. GARDEBRING  
Executive Director  
Minnesota Pollution Control Agency

APPENDIX A

RELATIONSHIP OF EXISTING RULES TO PROPOSED RULES

<u>Existing Rule Number</u>	<u>Proposed Rule Number</u>
6 MCAR § 4.9001 General Applicability, Definitions, Abbreviations, Incorporations, Severability, and Variances	Chapter One
6 MCAR § 4.9001 A. . . . .	.Repealed
6 MCAR § 4.9001 B. . . . .	.6 MCAR § 4.9100
6 MCAR § 4.9001 C. . . . .	.Repealed
6 MCAR § 4.9001 D. . . . .	.Repealed
6 MCAR § 4.9001 E. . . . .	.Repealed
6 MCAR § 4.9001 F. . . . .	.6 MCAR § 4.9101
6 MCAR § 4.9001 G. . . . .	.6 MCAR § 4.9103
6 MCAR § 4.9002 Classification Evaluation and Certification of Waste	Chapter Two and Three
6 MCAR § 4.9002 A. . . . .	.6 MCAR § 4.9128 A.
6 MCAR § 4.9002 B.1. . . . .	.Repealed
6 MCAR § 4.9002 B.2. . . . .	.Exhibit 6 MCAR § 4.9132 G.-1
6 MCAR § 4.9002 B.3. . . . .	.Replaced by 6 MCAR § 4.9132 A.
6 MCAR § 4.9002 B.4. . . . .	.Replaced by 6 MCAR § 4.9211 D.
6 MCAR § 4.9002 B.5. . . . .	.Replaced by 6 MCAR § 4.9131 D.
6 MCAR § 4.9002 C. . . . .	.6 MCAR § 4.9128 C.
6 MCAR § 4.9002 D. . . . .	.6 MCAR § 4.9205 and 4.9206
6 MCAR § 4.9002 E. . . . .	.6 MCAR § 4.9132
6 MCAR § 4.9002 F. . . . .	.Replaced by 6 MCAR § 4.9211 A.
6 MCAR § 4.9002 G. . . . .	.6 MCAR §§ 4.9207 and 4.9208
6 MCAR § 4.9002 H.1. . . . .	.Repealed
6 MCAR § 4.9002 H.2. . . . .	.6 MCAR § 4.9131 D.
6 MCAR § 4.9002 H.3. . . . .	.6 MCAR § 4.9209
6 MCAR § 4.9003 Generation of Hazardous Waste	Chapter Three
6 MCAR § 4.9003 A. . . . .	.Repealed
6 MCAR § 4.9003 B. . . . .	.6 MCAR § 4.9201
6 MCAR § 4.9003 C. . . . .	.6 MCAR § 4.9211 A.
6 MCAR § 4.9003 D. . . . .	.6 MCAR § 4.9211 C., D., & E.
6 MCAR § 4.9003 E.1. . . . .	.6 MCAR § 4.9211 F.
6 MCAR § 4.9003 E.2. . . . .	.6 MCAR § 4.9211 G.
6 MCAR § 4.9003 E.3. . . . .	.Repealed
6 MCAR § 4.9003 F. . . . .	.6 MCAR § 4.9211 B.
6 MCAR § 4.9003 G. . . . .	.Replaced by 6 MCAR § 4.9212 A.
6 MCAR § 4.9003 H. . . . .	.6 MCAR § 4.9214
6 MCAR § 4.9003 I. . . . .	.Repealed
6 MCAR § 4.9003 J. . . . .	.6 MCAR § 4.9215 D. & E.

6 MCAR § 4.9004 Location, Operation and Closure of a Hazardous Waste Facility	Repealed and Replaced by Chapters Five, Six and Seven
6 MCAR § 4.9005 Transportation of Hazardous Waste	Chapter Four
6 MCAR § 4.9005 A. . . . .	.Repealed
6 MCAR § 4.9005 B. . . . .	.6 MCAR § 4.9254 A.
6 MCAR § 4.9005 C.1. . . . .	.Repealed
6 MCAR § 4.9005 C.2.-3. . . . .	.6 MCAR § 4.9254 B.1. and B.2.
6 MCAR § 4.9005 D.1. . . . .	.6 MCAR 4.9554 B.3.
6 MCAR § 4.9005 D.2. . . . .	.Repealed and Replaced by 6 MCAR § 4.9257
6 MCAR § 4.9005 E. . . . .	.6 MCAR § 4.9259
6 MCAR § 4.9005 F. . . . .	.6 MCAR § 4.9259 F.
6 MCAR § 4.9005 G. . . . .	.6 MCAR § 4.9252
6 MCAR § 4.9005 H. . . . .	.Repealed
6 MCAR § 4.9006 I. Hazardous Waste Facility Permit Program Exceptions	Repealed and Replaced by 6 MCAR §§ 4.9128 C., 4.9129 and 4.9280
6 MCAR § 4.9008 Hazardous Waste Shipping Papers	Repealed and Replaced by Chapters Three and Four
6 MCAR § 4.9008 A. . . . .	.Repealed
6 MCAR § 4.9008 B. . . . .	.Repealed and Replaced by 6 MCAR § 4.9255
6 MCAR § 4.9008 C. . . . .	.6 MCAR § 4.9212
6 MCAR § 4.9008 D. . . . .	.Repealed
6 MCAR § 4.9008 E.1.and 2. . . . .	.6 MCAR §§ 4.9213 - 4.9255, 4.9256 and 4.9292
6 MCAR § 4.9008 E.3. . . . .	.6 MCAR § 4.9213 D.
6 MCAR § 4.9008 E.4. . . . .	.6 MCAR § 4.9217 and 4.9259
6 MCAR § 4.9008 E.5. . . . .	.6 MCAR § 4.9213 E.
6 MCAR § 4.9008 E.6. . . . .	.Repealed
6 MCAR § 4.9008 F.1.and 3. . . . .	.6 MCAR § 4.9250 B.
6 MCAR § 4.9008 F.2. . . . .	.Repealed
6 MCAR § 4.9008 G. . . . .	.Repealed
6 MCAR § 4.9008 H. . . . .	.Repealed
6 MCAR § 4.9008 I. . . . .	.Repealed
6 MCAR § 4.9009 County Regulation of Hazardous Waste Management	Chapter Eight

6 MCAR § 4.9009 A. . . . .	.Repealed and Replaced by 6 MCAR § 4.9559
6 MCAR § 4.9009 B. . . . .	.6 MCAR § 4.9560 B.
6 MCAR § 4.9009 C. . . . .	.6 MCAR § 4.9560 C.
6 MCAR § 4.9009 D. . . . .	.6 MCAR § 4.9560 D.
6 MCAR § 4.9010 Spillages and Leakages of Hazardous Waste	Repealed and Replaced by Chapter Four
6 MCAR § 4.9010 A. . . . .	.6 MCAR §§ 4.9215 B. and 4.9259 C.
6 MCAR § 4.9010 B. . . . .	.6 MCAR §§ 4.9215 C. and 4.9259 D.
6 MCAR § 4.9010 C. . . . .	.Repealed

## Appendix B

### Probability of Facility Design Being Exceeded One or More Times During the Active Life of the Facility

Facility's Active Life (Years)	25 Year Event	50 Year Event	100 Year Event
1	.04	.02	.01
5	.18	.10	.05
10	.34	.18	.10
20	.56	.33	.18
30	.71	.45	.26
50	.87	.64	.39

$$J_1 \text{ or more} = 1 - (1 - p)^{N^*}$$

Where:

$J_1$  or more = probability of the facility design being exceeded one or more times during the active life of the facility

p = average probability of occurrence

N = active life of facility in years

\*From: Linsley, Ray Jr., M. Kohler, and J. Paulus, 1975, Hydrology for Engineers, McGraw-Hill Book Company, New York, Page 350.

APPENDIX C

PROPOSED DEFINITIONS: 6 MCAR § 4.9100

<u>Definition</u>	<u>Source</u>	<u>Federal Background Document or Preamble in Which the Term is Discussed</u>
A. Act	40 C.F.R. § 260.10(a)	40 C.F.R. Part 260 Subpart B - Definitions and Provisions for Confidentiality
B. Active Portion	40 C.F.R. § 260.10(a)	40 C.F.R. Part 260 Subpart B - Definitions and Provisions for Confidentiality
C. Agency	6 MCAR § 4.9001 B.1.	
D. Aquifer	40 C.F.R. § 260.10(a)	40 C.F.R. Part 265 Subpart F - Ground Water Monitoring and 47 F.R. 32274 at 32349, and 32289
E. Authorized Representative	40 C.F.R. § 260.10(a)	45 F.R. 12722
F. Certification	40 C.F.R. § 260.10(a)	47 F.R. 32274 at 32349 and 32289
G. Chemical Composition	6 MCAR § 4.9001 B.2.	
H. Closed Portion	40 C.F.R. § 260.10(a)	40 C.F.R. Part 265 Subpart G - Interim Status Standards for Closure and Post-Closure
I. Confined Aquifer	40 C.F.R. § 260.10(a)	40 C.F.R. Part 122 Subpart A - Definitions and General Program Requirements
J. Container	6 MCAR § 4.9001 B.4. and 40 C.F.R. § 260.10(a)	40 C.F.R. Part 265 Subpart I - Interim Status Standards for the Use and Management of Containers
K. Contingency Plan	40 C.F.R. § 260.10(a)	40 C.F.R. Parts 264/265 Subpart D - Contingency Plan and Emergency Procedures
L. Control Equipment	6 MCAR § 4.0002 A.7. (APC 2(a)(7))	
M. Demolition Debris	6 MCAR § 4.9001 B.6.	

<u>Definition</u>	<u>Source</u>	<u>Federal Background Document or Preamble in Which the Term is Discussed</u>
N. Designated Facility	40 C.F.R. § 260.10(a)	40 C.F.R. Part 265 Subpart B - Definitions and Provisions for Confidentiality
O. Dike	40 C.F.R. § 260.10(a)	40 C.F.R. Part 265 Subpart K - Interim Status Standards for Surface Impoundments
P. Director	6 MCAR § 4.9001 B.7.	
Q. Discarded	40 C.F.R. § 261.2	45 F.R. 33084 at 33090 and 40 C.F.R. Part 261 Subpart A - Definitions and General Program Requirements
R. Disposal	40 C.F.R. § 260.10(a)	40 C.F.R. Part 260 Subpart B- Definitions and Provisions for Confidentiality
S. Disposal Facility	40 C.F.R. § 260.10(a)	40 C.F.R. Part 260 Subpart B- Definitions and Provisions for Confidentiality
T. Elementary Neutralization Unit	40 C.F.R. § 260.10(a)	45 F.R. 76074 and 76076
U. Equivalent Method	40 C.F.R. § 260.10(a)	40 C.F.R. Part 260 Subpart B - Definitions and Provisions for Confidentiality
V. Existing Portion	40 C.F.R. § 260.10(a)	47 F.R. 32274 at 32349 and 32290
W. Facility	40 C.F.R. § 260.10(a)	40 C.F.R. Part 260 Subpart B - Definitions and Provisions for Confidentiality
X. Flash Point	6 MCAR § 4.9001 B.11.	
Y. Food Chain Crops	40 C.F.R. § 260.10(a)	40 C.F.R. Part 265 Subpart M - Interim Status Standards for Land Treatment Facilities
Z. Formation		46 F.R. 11126 at 11150
AA. Freeboard	40 C.F.R. § 260.10(a)	40 C.F.R. Part 260 Subpart B - Definitions and Provisions for Confidentiality

Federal Background Document  
or Preamble in Which the  
Term is Discussed

<u>Definition</u>	<u>Source</u>	<u>Federal Background Document or Preamble in Which the Term is Discussed</u>
BB.Free Liquids	40 C.F.R. § 260.10(a)	40 C.F.R. Part 265 Subpart N- Interim Status Standards for Landfills
CC.Garbage	6 MCAR § 4.9001 B.13.	
DD.Generator	6 MCAR § 4.9001 B.14. and 40 C.F.R. § 260.10(a)	40 C.F.R. Part 260 Subpart B - Definitions and Provisions for Confidentiality
EE.Ground Water or Underground Water	6 MCAR § 4.8022	
FF.Hazardous Waste	6 MCAR § 4.9001 B.17. and Minn. Stat. § 116.06, subd. 13.	
GG.Hazardous Waste Constituent	40 C.F.R. § 260.10(a)	40 C.F.R. Part 260 Subpart B - Definitions and Provisions for Confidentiality
HH.Hazardous Waste Incinerator	40 C.F.R. § 260.10(a)	40 C.F.R. Part 265 Subpart O - Interim Status Standards for Hazardous Waste Incinerators
II.Hazardous Waste Management	6 MCAR § 4.9001 B.19.	
JJ.Hazardous Waste Number	40 C.F.R. § 260.10(a)	40 C.F.R. Part 261 Subpart D - Lists of Hazardous Wastes
KK.Identification Number	40 C.F.R. § 260.10(a)	40 C.F.R. Part 260 Subpart B - Definitions and Provisions for Confidentiality
LL.In Operation	40 C.F.R. § 260.10(a)	40 C.F.R. Part 260 Subpart B - Definitions and Provisions for Confidentiality
MM.Inactive Portion	40 C.F.R. § 260.10(a)	40 C.F.R. Part 260 Subpart B - Definitions and Provisions for Confidentiality
NN.Incompatible Wastes	40 C.F.R. § 260.10(a)	40 C.F.R. Part 260 Subpart B - Definitions and Provisions for Confidentiality



Federal Background Document  
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Term is Discussed

<u>Definition</u>	<u>Source</u>	
OO.Independent Registered Engineer	New Definition	
PP.Individual Generation Site	40 C.F.R. § 260.10(a)	40 C.F.R. Part 261 Subpart B - Criteria for Identifying Characteristics of Hazardous Wastes
QQ.Injection Well	40 C.F.R. § 260.10(a)	40 C.F.R. Part 122 Subpart A - Definitions and General Program Requirements
RR.Inner Liner	40 C.F.R. § 260.10(a)	40 C.F.R. Part 265 Subpart J - Interim Status Standards for Tanks
SS.Interim Status	6 MCAR § 4.9381 and 42 U.S.C. § 6925	
TT.International Shipment	40 C.F.R. § 260.10(a)	40 C.F.R. Part 265 Subpart B - Definitions and Provisions for Confidentiality
UU.Land Treatment Facility	40 C.F.R. § 260.10(a)	40 C.F.R. Part 265 Subpart M - Interim Status Standards for Land Treatment Facilities
VV.Landfill	40 C.F.R. § 260.10(a)	40 C.F.R. Part 265 Subpart N - Interim Status Standards for Landfills
WW.Landfill Cell	40 C.F.R. § 260.10(a)	40 C.F.R. Part 265 Subpart N - Interim Status Standards for Landfills
XX.Leachate	6 MCAR § 4.9001 B.22. and 40 C.F.R. § 260.10(a)	40 C.F.R. Part 265 Subpart N - Interim Status Standards for Landfills
YY.Liner	40 C.F.R. § 260.10(a)	40 C.F.R. Part 265 Subpart N - Interim Status Standards for Landfills

<u>Definition</u>	<u>Source</u>	<u>Federal Background Document or Preamble in Which the Term is Discussed</u>
ZZ. Manifest	6 MCAR § 4.9001 B.23. and 40 C.F.R. § 260.10(a)	45 F.R. 12722 at 12723 and 40 C.F.R. Part 260 Subpart B - Definitions and provisions for Confidentiality
AAA. Manifest Document Number	40 C.F.R. § 260.10(a)	40 C.F.R. Part 260 Subpart B - Definitions and Provisions for Confidentiality
BBB. Manufacturing or Mining By-Products	40 C.F.R. § 261.2	45 F.R. 32274 at 33084 and 33093 and 40 C.F.R. Part 261 Subpart A - Definitions and General Program Requirements
CCC. Median Lethal Concentration	6 MCAR § 4.9001 B.24.	
DDD. Median Lethal Dose	6 MCAR § 4.9001 B.25.	
EEE. Mining Overburden Returned to the Mine site	40 C.F.R. § 260.10(a)	40 C.F.R. Part 261 Subpart A - Identification and Listing of Hazardous Waste - General
FFF. Movement	40 C.F.R. § 260.10(a)	45 F.R. 33066
GGG. On-site	40 C.F.R. § 260.10(a)	45 F.R. 12722 at 12723
HHH. Open Burning	6 MCAR § 4.9001 B.27. and 40 C.F.R. § 260.10(a)	40 C.F.R. Part 265 Subpart P - Interim Status Standards for Hazardous Waste Facilities for Thermal Treatment Processes Other Than Incineration and for Open Burning
III. Operator	40 C.F.R. § 260.10(a)	40 C.F.R. Part 260 Subpart B - Definitions and Provisions for Confidentiality
JJJ. Other Waste Material	40 C.F.R. § 261.2	45 F.R. 33084 and 40 C.F.R. Part 261 Subpart A - Definitions and General Program Requirements

<u>Definition</u>	<u>Source</u>	<u>Federal Background Document or Preamble in Which the Term is Discussed</u>
KKK. Owner	40 C.F.R. § 260.10(a)	40 C.F.R. Part 260 Subpart B - Definitions and Provisions for Confidentiality
LLL. Partial Closure	40 C.F.R. § 260.10(a)	40 C.F.R. Part 265 Subpart G - Interim Status Standards for Closure and Post-Closure Care
MMM. Person	6 MCAR § 4.9001 B.29. and Minn. Stat. § 116.06, subd. 8	
NNN. Personnel	40 C.F.R. § 260.10(a)	40 C.F.R. Parts 264/265 Subpart B - General Facility Standards
OOO. Pesticide	6 MCAR § 4.9001 B.30.	
PPP. Petroleum Derived Waste Oil	New Definition	
QQQ. Pile	40 C.F.R. § 260.10(a)	40 C.F.R. Part 265 Subpart L - Interim Status Standards for Waste Piles
RRR. Point Source	Minn. Stat. § 115.03 subd. 15 and 40 C.F.R. § 260.10(a)	
SSS. Pretreatment Unit	New Definition	
TTT. Publicly Owned Treat- ment Works	40 C.F.R. § 260.10(a)	40 C.F.R. Part 260 Subpart B - Definitions and Provisions for Confidentiality
UUU. Representative Sample	40 C.F.R. § 260.10(a)	40 C.F.R. Part 260 Subpart B - Definitions and Provisions for Confidentiality
VVV. Resource Recovery	6 MCAR § 4.9001 B.31.	

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<u>Definition</u>	<u>Source</u>	<u>Federal Background Document or Preamble in Which the Term is Discussed</u>
WWW. Rubbish	6 MCAR § 4.9001 B.34.	
XXX. Run-Off	40 C.F.R. § 260.10(a)	40 C.F.R. Part 265 Subpart N - Interim Status Standards for Landfills
YYY. Run-On	40 C.F.R. § 260.10(a)	40 C.F.R. Part 265 Subpart N - Interim Status Standards for Landfills
ZZZ. Saturated Zone	6 MCAR § 4.9001 B.36. and 40 C.F.R. § 260.10(a)	
AAAA. Seasonal High Water Table	New Definition	
BBBB. Sewage	6 MCAR § 4.9001 B.37.	
CCCC. Sewer System	6 MCAR § 4.9001 B.38.	
DDDD. Shoreland	6 MCAR § 4.9001 B.39.	
EEEE. Sludge	Minn. Stat. § 116.06 subd. 9 i.	
FFFF. Spill	40 C.F.R. § 260.10(a)	40 C.F.R. Part 263 Subpart C - Hazardous Waste Discharges
GGGG. State	New Definition	
HHHH. Storage	40 C.F.R. § 260.10(a)	40 C.F.R. Part 265 Subpart I - Interim Status Standards for Use and Management of Containers
IIII. Surface Impoundment	40 C.F.R. § 260.10(a)	40 C.F.R. Part 265 Subpart K - Interim Status Standards for Surface Impoundments
JJJJ. Surficial Karst Features	New Definition	

<u>Definition</u>	<u>Source</u>	<u>Federal Background Document or Preamble in Which the Term is Discussed</u>
KKKK.Tank	6 MCAR § 4.9001 B.40. and 40 C.F.R. § 260.10(a)	40 C.F.R. Part 265 Subpart J - Interim Status Standards for Tanks
LLLL.Thermal Treatment	40 C.F.R. § 260.10(a)	40 C.F.R. Part 265 Subpart P - Interim Status Standards for Hazardous Waste Facilities for Thermal Treatment Processes Other Than Incineration and for Open Burning
MMMM.Totally Enclosed Treatment Facility	40 C.F.R. § 260.10(a)	40 C.F.R. Part 265 Subpart J - Interim Status Standards for Tanks
NNNN.Transfer Facility	40 C.F.R. § 260.10(a)	45 F.R. 86966 at 86968
OOOO.Transporta- tion	40 C.F.R. § 260.10(a)	45 F.R. 12722 and 40 C.F.R. Part 260 Subpart B - Definitions and Provisions for Confidentiality
PPPP.Transport Vehicle	40 C.F.R. § 260.10(a)	45 F.R. 72024 at 72028
QQQQ.Transporter	40 C.F.R. § 260.10(a)	40 C.F.R. Part 260 Subpart B - Definitions and Provisions for Confidentiality
RRRR.Treatment	40 C.F.R. § 260.10(a)	40 C.F.R. Part 265 Subpart J - Interim Status Standards for Tanks
SSSS.Treatment Zone	40 C.F.R. § 260.10(a)	47 F.R. 32274 at 32349 and 32290
TTTT.Unsaturated Zone	40 C.F.R. § 260.10(a)	40 C.F.R. Part 265 Subpart F - Ground Water Monitoring
UUUU.Uppermost Aquifer	40 C.F.R. § 260.10(a)	47 F.R. 32274 at 32349 and 32290

Federal Background Document  
or Preamble in Which the  
Term is Discussed

<u>Definition</u>	<u>Source</u>	<u>Federal Background Document or Preamble in Which the Term is Discussed</u>
VVVV.Vessel	40 C.F.R. § 260.10(a)	45 F.R. 72024
WWWW.Waste	6 MCAR § 4.9001 B.42.	
XXXX.Wastewater Treatment Unit	40 C.F.R. § 260.10(a)	45 F.R. 76074 and 76076
YYYY.Water Bulk Shipment	40 C.F.R. § 260.10(a)	45 F.R. 12722 at 12723 and 40 C.F.R. Part 260 Subpart B - Definitions and Provisions for Confidentiality
ZZZZ.Waters of the State	6 MCAR § 4.9001 B.43.	
AAAAA.Water Table	6 MCAR § 4.9001 B.44.	
BBBBB.Well	40 C.F.R. § 260.10(a)	40 C.F.R. Part 122 Subpart A - Definitions and General Program Requirements
CCCCC.Wetland	6 MCAR § 4.9001 B.45.	