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Minnesota Pollution Control Agency

October 6, 1995

Ms. Maryanne Hruby, Executive Director
Legislative Commission to Review Administrative Rules
State Office Building, Room 55
100 Constitution Avenue
St. Paul, Minnesota 55155

Dear Ms. Hruby:

Re: Statement of Need and Reasonableness for Proposed Amendments to Rules Governing Standards of Performance for Hot Mix Asphalt Plants, Minn. R. 7011.0900 to 7011.0925

Enclosed for your review is a copy of the Statement of Need and Reasonableness for above proposed rule amendments as required by Minn. Stat. § 14.115, subd. 8 (1994). If you have any questions please contact me at (612) 296-7712.

Sincerely,

Norma L. Coleman

Norma L. Coleman
Administrative Rulemaking Coordinator
Air Quality Division
Program Development Section

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Enclosure

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Minnesota Pollution Control Agency

December 11, 1995

Ms. Maryanne Hruby, Executive Director
Legislative Commission to Review Administrative Rules
State Office Building, Room 55
100 Constitution Avenue
St. Paul, Minnesota 55155

Re: Supplement Statement of Need and Reasonableness (SONAR) for Proposed Amendments to Rules Governing Standards of Performance for Hot Mix Asphalt Plants, Minn. R. 7011.0900 to 7011.0925

Dear Ms. Hruby:

Enclosed for your review is a copy of the Supplement Statement of Need and Reasonableness (SONAR) for the above-proposed rule amendments. The original SONAR was sent to you on October 6, 1995, (copy of letter attached) as required by Minn. Stat. § 14.131 (1994). Since the time I sent you the original SONAR, the Minnesota Pollution Control Agency made a minor change to the rule that required the Supplement (SONAR). The rule and Notice of Intent to Adopt will be published in the *State Register* on December 11, 1995.

If you have any questions, please call me at (612)296-7712.

Sincerely,

Norma L. Coleman

Norma L. Coleman
Administrative Rulemaking Coordinator
Program Development Section
Air Quality Division

NLC:gr

Enclosure

STATE OF MINNESOTA

POLLUTION CONTROL AGENCY

In the Matter of Proposed Rules Governing Standards of Performance for Hot Mix Asphalt Plants, Minn. R. 7011.0900 to 7011.0925

STATEMENT OF NEED AND REASONABLENESS

I. INTRODUCTION

This rulemaking proposes to revise the hot mix asphalt plant performance standard (currently called the "asphalt concrete plant" standard) to allow for more efficient and effective regulation of this industry and better protection of the environment. The Minnesota Pollution Control Agency (MPCA) is seeking to improve the performance standard for hot mix asphalt plants (asphalt plants) to ensure the MPCA's goal of environmental protection and at the same time streamline the methods asphalt plants use to show compliance with applicable rules, including streamlining the permit process. This proposed rule is the first substantive amendment of the asphalt plant standard since its original adoption in 1976.

The goals of the rule making are:

1. to ensure that asphalt plants operate in a manner which minimizes their environmental impact,
2. to regulate the industry efficiently, effectively and fairly,
3. promote the use of less polluting plants, and
4. streamline the ways in which plants show compliance.

To meet these goals, the MPCA has included the following changes or additions to the

existing hot mix asphalt performance standard in the proposed rule:

1. Added operation, record keeping and monitoring requirements for hot mix asphalt plant control equipment and dryer burners.
2. Outlined performance test frequency for hot mix asphalt plants which is dependent on the control equipment type.
3. Changed the opacity performance standard for existing asphalt concrete plants.
4. Listed materials allowed to be processed by asphalt plants.
5. Allowed small production throughput increases for all plants which test at less than 80 percent of their emission limit and additional increases for plants with baghouses whose tested emission rate is less than 50 percent of their emission limit.

The rule also proposes to streamline the permit process for asphalt plants by making them eligible for registration permits. This proposal results from the need to streamline the permit process to handle the increased number of air emission sources regulated under the Clean Air Act Amendments of 1990 (1990 Amendments). In addition to other titles of the 1990 Amendments which imposed new air pollution control requirements on air emission sources, Title V required each state to develop an operating permit program to implement the requirements of the Clean Air Act (CAA). The 1990 Amendments, in addition to increasing the number of regulated air emission sources, added many new requirements and procedures. The 1990 Amendments also contained provisions to allow some flexibility in source operations under the permit program. In 1993, the MPCA promulgated a new operating permit rule that contained the new requirements of the CAA, but also significantly streamlined the permit process for minor changes at an air emission source and increased the emission threshold that requires a permit for many pollutants to be more consistent with the federal thresholds. After promulgation of the new operating

permit rule, the MPCA continued to evaluate other approaches to further streamline the permitting process. Rulemaking done in 1994 further streamlined permitting activities for smaller sources and reduced the anticipated resource burden of the new operating permit program by creating a new permit type for sources with low actual emissions - the registration permit.

Registration permits regulate air emission sources that have high potential to emit air pollutants (and therefore need to obtain permits), but low actual emissions, in an extremely streamlined way. As set forth in Minn. R. 7007-1110-.1130, registration permittees submit streamlined applications and are subject to emission limitations that are no more than half the applicable federal permit thresholds. Compliance with these emission limits is ascertained through streamlined recordkeeping and reporting requirements. Another important requirement is that registration permit holders comply with all "applicable requirements," which is defined to include all air quality and noise requirements that apply to a source of their type. Because the registration permits are so streamlined, it is important that the applicable standard of performance for a source category include all requirements that the MPCA believes are necessary to minimize air pollution from each type of source.

The MPCA excluded asphalt plants subject to a new source performance standard from eligibility for registration permits, because the state asphalt plant standard did not at the time include all requirements that the MPCA deemed necessary for these facilities. The MPCA, therefore, needed to issue these sources a source-specific part 70 or state permit, or a detailed general permit, to assure compliance with emisson limitations. The MPCA realized, however, that it could make asphalt plants eligible for registration permits if it updated the asphalt plant performance standard to include all necessary requirements for these facilities. The registration

permit, because it requires compliance with all applicable requirements, would then include all needed air pollution control requirements for these facilities.

On October 10, 1994, a Notice of Solicitation of Outside Information or Opinion was published in the State Register on October 10, 1994, (19 State Register 769) in preparing to propose amendments to the rules. The MPCA formed a work group consisting of representatives from asphalt producers, the Minnesota Asphalt Pavement Association (MAPA), the Minnesota Department of Transportation (MnDOT), MPCA Air Quality staff and a citizen's environmental group. Work group meetings have been held approximately every six weeks beginning November 29, 1994. Work group members are listed in Appendix B. (The representative from the citizen's environmental group and other citizen and environmental groups, the Department of Health, local government agencies, and other miscellaneous parties were not able to participate directly, but have been receiving copies of work group minutes.) The MPCA has received numerous comments and ideas from the work group and many of these comments have been incorporated into the proposed revisions.

Many of the proposed rule requirements, such as performance test frequency, are based on the effectiveness of the control equipment at removing particulate matter. Hot mix asphalt plants also emit volatile organic compounds (VOCs) as well as other criteria and hazardous air pollutants. Minnesota Rules have emission standards for particulate emissions, therefore, the requirements in the proposed rule are focused on complying with this standard. The MPCA recognizes that some plants, because of their design, will have lower emissions of VOCs such as counterflow drum mix plants. Because the state does not currently have emission standards for VOCs and evaluating emission standards was beyond the scope of this rule making, the proposed rule does not specifically address practices and equipment most favorable to reducing VOC

emissions. The U.S. Environmental Protection Agency (EPA) is required to promulgate a Maximum Achievable Technology Standard for hot mix asphalt plants by the year 2000. This standard will address hazardous air pollutant emissions from hot mix asphalt plants.

The titles of the proposed rule parts are shown below. The parts shown in italics are all new material; however, all parts will be amended:

7011.0900 Definitions

7011.0905 Standards of Performance for Existing Hot Mix Asphalt Plants

7011.0909 Standards of Performance for New Hot Mix Asphalt Plants

7011.0911 Maintenance of Dryer Burner

7011.0913 Hot Mix Asphalt Plant Fuel, Materials, and Additives Operating Requirements

7011.0915 Test Methods (Repealed)

7011.0917 Asphalt Plant Control Equipment Requirements

7011.0920 Performance Tests

7011.0922 Operational Requirements and Limitations From Performance Tests

Minor changes to the registration permit sections of chapter 7007 are proposed to clarify how the hot mix asphalt performance standard applies for purposes of asphalt plant compliance with the requirements of registration permit Option D. A process description of the asphalt industry taken from the recently published EPA Proposed 5th Edition AP-42 emission factor guidance document is included in Appendix A to characterize the state of the industry at the time of this proposed rulemaking.

II. STATEMENT OF THE MPCA'S STATUTORY AUTHORITY

Minn. Stat. § 116.07, subd. 4 provides general authority to adopt, amend and rescind rules for the prevention, abatement, or control of air pollution.

> Rules and standards. Pursuant and subject to the provisions of chapter 14, and the provisions hereof, the pollution control agency may adopt, amend and rescind rules and standards having the force of law relating to any purpose within the provisions of Laws 1967, chapter 882, for the prevention, abatement, or control of air pollution. Any such rule or standard may be of general application throughout the state, or may be limited as to times, places, circumstances, or conditions in order to make due allowance for variations therein. Without limitation, rules or standards may relate to sources or emissions of air contamination or air pollution, to the quality or composition of such emissions, or to the quality of or composition of the ambient air or outdoor atmosphere or to any other matter relevant to the prevention, abatement, or control of air pollution.

Under this statute, the MPCA has the necessary authority to adopt the proposed rule amendments.

III. STATEMENT OF NEED

Minn. Stat. ch. 14 requires the MPCA to make an affirmative presentation of the facts establishing the need for and reasonableness of the proposed rule. In general terms, this means that the MPCA must set forth the reasons for its proposal, and the reasons must not be arbitrary or capricious. To the extent that need and reasonableness are separate, "need" means that a problem exists which requires administrative attention. This section addresses the need for the proposed amendments.

The proposed rule amendments are needed for five primary reasons:

1. In the past, many similar requirements specific to asphalt plants were written into each asphalt plant permit. The MPCA believes the plant-specific requirements had developed to a point where it was more appropriate to include them in the MPCA's asphalt plant rules.

2. Currently, most hot mix asphalt plants operating in Minnesota have operating permits, but the plant-specific permit requirements can vary depending upon when the permit was issued. The proposed rule, by laying out the minimum requirements for environmentally responsible operation of an asphalt plant will create a more level playing field. The rules will apply consistently to all asphalt plants, which both makes MPCA enforcement of the requirements simpler and allows the industry and public to know clearly what asphalt plant owners and operators need to do to comply.

3. The business conditions that hot mix asphalt plants must operate under demand flexibility in operations. The business is both seasonal and dependent on weather conditions. The proposed rulemaking is needed to allow plants more flexibility in their operations, while ensuring their operation in an environmentally sound manner.

4. An analysis of 99 asphalt plant performance tests conducted from 1991 to 1994 showed that hot mix asphalt plants with baghouses (or fabric filters) for particulate control met the applicable emission limit 100 percent of the time. (Appendix C contains a summary of performance test results.) Hot mix asphalt plants with wet systems met the applicable emission limit in only 64 percent of the performance tests conducted. The MPCA believes that regulatory incentives are needed to promote the use of the least polluting plants - those with baghouses. The MPCA believes the previous practice of requiring testing of each plant, regardless of how its emissions are controlled, every five years is not supportable in light of the performance test results. In order to ensure that plants with wet systems are complying with the applicable particulate emission limit, more frequent testing is needed. Plants with baghouses do not need to be tested with the same frequency because of the reliability

and effectiveness of this type of control equipment for this industry. Reduced frequency of testing for plants with baghouses also provides regulatory incentives to promote the installation of baghouses, the control equipment which best controls particulate emissions.

5. Record keeping requirements can be "costly" in terms of the personnel required to maintain them. The proposed rule simplifies record keeping and yet still ensures that sufficient records are kept for the MPCA to be able to verify whether an asphalt plant is in compliance with applicable environmental requirements.

IV. STATEMENT OF REASONABLENESS

Minn. Stat. ch. 14 requires the MPCA to make an affirmative presentation of the facts establishing the reasonableness of the proposed rule. "Reasonableness" means that there is a rational basis for the proposed rule. This section addresses the reasonableness of the proposed rule amendments.

A. REASONABLENESS AS A WHOLE

The proposed rule is reasonable because it specifies the requirements most critical to the operation of an asphalt plant in an environmentally responsible manner. These requirements for the most part are not new to the industry and have been in many source-specific permits in the past. Industry representatives have asked that environmental regulations be straight forward, clearly outlined and be the same from plant to plant, except where the operational or equipment differences at an individual asphalt plant merit different treatment. (For example, large producers may warrant more frequent performance testing than small producers, or may need additional operating restrictions due to the unique characteristics of an individual plant.)

The proposed amendments focus on proper operation and maintenance of the control equipment and dryer burner, the most important factor in achieving compliance on a day to day basis. Two new sections of the proposed rule set forth the new requirements for this equipment. It is reasonable to have requirements in a rule for practices which are so important to ensuring compliance with applicable emission limits.

The maintenance practices for the control equipment and dryer burner specified in the proposed rule are based on practices recommended by the asphalt industry itself. Fuel savings are also derived if an asphalt plant follows the maintenance practices specified in the rule. A well maintained and managed asphalt plant is currently performing the majority of the proposed requirements. Because the new requirements will not require any additional equipment of significant cost, requiring these practices is reasonable.

An effort was made in all parts of the proposed rule to make use of established record keeping practices to show compliance with the various parts. This is reasonable because it reduces the amount of resources necessary to show compliance by not requiring significant new recordkeeping. At the same time, the records that are required will enable the MPCA to verify whether an asphalt plant is in compliance with the rule.

As shown in Appendix C, control equipment that uses liquid to remove pollutants traditionally has not performed as well or as reliably as baghouses in preventing particulate emissions from asphalt plants. The manufacturer's rated effectiveness of baghouses is typically higher than that for wet systems. (Although in some instances a wet system may be just as effective as a baghouse provided it is adequately maintained.) Therefore, it is reasonable to have some different requirements for asphalt plants with baghouses than for plants with wet systems, based on the demonstrated differences in performance between these types of control equipment.

Title V requires sources with potential emissions greater than 100 tons per year of any criteria pollutant (except lead whose threshold is 10 tons per year) or potential emissions of greater than 10 tons per year (tpy) of any single HAPs or 25 tpy of combined HAPs to apply for a permit. Hot mix asphalt plants have potential emissions above 100 tons per year for criteria pollutants, but less than 25 tons per year for a combination of hazardous air pollutants or 10 tons per year for any single hazardous air pollutant. However, due to operating limits, fuel usage, control equipment and other reasons most hot mix plants' actual emissions are often well below these thresholds. Based on 1993 emission inventory summary information, the approximately 120 asphalt plants operating in Minnesota emit less than one percent of total air emissions reported by stationary industrial sources in the state.

Registration permits were designed to regulate in a streamlined way categories of air emission sources that have high potential but low actual air emissions. Currently only asphalt plants not subject to the New Source Performance Standard (NSPS) for hot mix asphalt plants (40 CFR 60, Subpart I) are eligible for the registration permit. To qualify for an Option D registration permit, a hot mix asphalt plant must have actual emissions of less than 50 tons per year of each criteria pollutant except lead which has a lower threshold. The proposed rulemaking will allow plants subject to Subpart I to receive a registration permit. It is estimated about 50 percent of all hot mix asphalt plants may qualify for registration permit option D.

Under the existing permit rules, to qualify for a registration permit asphalt plants need to receive credit for their control equipment and meet the requirements in the control equipment rule (7011.0060 to 7011.0080). The control equipment rule requires that the owner or operator of the facility follow manufacturer's specifications for operation and maintenance of the control

equipment. Because manufacturer's specifications may not always be available or relevant for this industry and may not go far enough to ensure environmentally responsible operation, the proposed rulemaking establishes specific operation and maintenance requirements for asphalt plant control equipment.

Because the amendments to the asphalt plant standard will establish the necessary requirements for these facilities, the rule amendments also will make them eligible for registration permits. An asphalt plant receiving a registration permit will be subject to the same applicable requirements as an asphalt plant receiving another type of permit. The requirements proposed in this rulemaking are those most essential to minimizing the impact asphalt plants have on air quality. The registration permit process offers a simplified application process, flexibility of operation, and is non-expiring. This will reduce MPCA resources needed to regulate a source category with small actual emissions, and thus shift that resource savings onto improved regulation of the large, more complex sources of air emissions in the state of Minnesota.

These proposed rule amendments are reasonable because they establish consistent, updated requirements for asphalt plants that protect the environment, encourage the use of the best performing type of control equipment on asphalt plants, and allow asphalt plants to qualify for the streamlined registration permit when they have low actual emissions.

B. REASONABLENESS OF THE RULE BY SECTION

This section discusses the reasonableness of each part of the proposed rule amendments.

The MPCA is proposing to change the name of the source category from "asphalt concrete plant" to "hot mix asphalt plant." This is reasonable because it reflects the terminology

used by the industry and the term used in the federal new source performance standard. The terminology "asphalt concrete" was easily confused with "ready mix concrete," which is a separate industry. This name change appears throughout the rule amendments.

1. 7011.0900 Definitions

It is reasonable to include a scope provision that states that the definitions in this part only apply to the asphalt plant standard, since these terms were developed for this standard and are not meant to alter the meaning of other MPCA air quality rules. Similarly, since the asphalt plant rule relies on several general air quality terms that are already defined elsewhere in the MPCA air quality rules, it is reasonable to reference the locations of these definitions and state that the definitions of those terms also apply to the asphalt plant standard.

The MPCA is retaining the definition of an asphalt plant that is in the existing rule, except that the name is changed to "hot mix asphalt plant" for the reasons described above.

"Asphalt plant control equipment" is defined because of the new operation and maintenance requirements outlined in the performance standard. A term was needed to refer to this group of control equipment and to distinguish it from the term "listed control equipment" used in Minn. R. 7011.0060.

The term "existing hot mix asphalt plant" is defined to eliminate confusion caused in the past over the date before which a plant would be considered existing and therefore subject to different emission standards than a "new hot mix asphalt plant," which is also defined. Minn. R. 7005.0100, subps. 11a and 25b define the terms "existing facility" and "new facility," and distinguish between existing and new facilities based on the effective date of the relevant state or federal performance standard for each source category, and on when each facility was constructed, modified or reconstructed. Minn. R. 7011.0010, subps. 1 and 2 provide for the same

demarcation between new and existing facilities for purposes of applying the standards of performance in chapter 7011. The definitions in the rule amendment are reasonable because they contain all of the elements of the current state rules and put them together with the relevant effective date of the asphalt plant new source performance standard to clearly identify which plants are governed by the existing plant standards and which are governed by the new plant standards. These definitions do not change the effect of the current rules; they restate them in a convenient place and are tailored to the specific case of the asphalt plant standard. The terms "existing" and "new" are used because of the historic use of these terms in Minnesota's performance standards. A "new hot mix asphalt plant" could be 20 years old under the definition in the rule.

2. 7011.0905 Standards of Performance for Existing Hot Mix Asphalt Plants

In these rule amendments, the MPCA proposes to change the opacity limit to remove the current rule's allowance of opacity excursions of 40 percent opacity for four minutes or less in any 30 minute period and to remove excursions of 60 percent opacity for not more than four minutes in any 60 minute period. It is reasonable to remove these excursions because MPCA review of 39 opacity tests performed on existing asphalt plants subject to this opacity standard showed that none of the existing asphalt plants needed the additional allowances for opacity excursions in order to meet this opacity standard. Thus, this data supports the fact that asphalt plants built prior to June 11, 1973, are capable of meeting a 20 percent maximum opacity limit at all times, as new asphalt plants subject to the NSPS are required to do. (Actually, 40 CFR 60 Subpart I requires an opacity of less than 20 percent at all times whereas Minn. R. 7011.0905 will allow 20 percent opacity or less at all times.) This change also simplifies the opacity standard for existing plants. An existing asphalt plant following the operation and maintenance

requirements outlined in the proposed rule should not exceed a 20 percent opacity limit as determined by EPA Method 9.

3. 7011.0909 Incorporation of New Source Performance Standard by Reference

This section was numbered 7011.0925 and is renumbered to place it in closer proximity to the performance standard for existing plants (plants not subject to the new source performance standard). No changes are proposed to the text of this rule.

4. 7011.0911 Maintenance of Dryer Burner

This part sets forth minimum monitoring and maintenance requirements for the dryer burner at all asphalt plants. Subpart 1 requires the owner /operator to tune the dryer burner for maximum combustion efficiency annually according to dryer burner manufacturer specifications and to record daily the fuel pressure gauge reading and check for draft at the burner inlet. An estimated 40 percent of producers currently tune and inspect the dryer burner as part of their annual maintenance. Tuning and inspection of the dryer burner by an independent company is not required.

An efficiently operated burner also reduces the fuel used per ton of asphalt produced. Since efficient operation of the dryer burner reduces the emissions of criteria pollutants such as nitrogen oxides and carbon monoxide as well as toxic air pollutants such as formaldehyde, and since a maintaining a negative draft is important to ensuring the proper air flow for efficient combustion, it is reasonable in subpart 2 to require the owner or operator of an asphalt plant to inspect the fuel pressure gauge and check for a draft each day.

The recordkeeping requirements of subpart 3 will be used to help verify compliance with the requirements of subparts 1 and 2. It is reasonable to require owners and operators to keep a

record of these activities so that MPCA inspectors can determine whether a dryer burner has been properly maintained.

5. 7011.0913 Hot Mix Asphalt Plant Operating Requirements

This part will limit the materials that asphalt plants may process to those materials designated here unless otherwise allowed by a state, general or part 70 permit issued under Minn. R. 7007.0050 to 7007.1850. For registration permittees, written approval must be received from the Commissioner to process other materials. It is reasonable to restrict the processing of alternative materials which have not undergone review by the MPCA because of possible endangerment to human health or the environment. The designated materials are those materials most commonly used in asphalt production and are materials which have been previously used during performance testing or are substantially similar in composition to materials used during testing. The materials are broken into three categories: fuels for combustion purposes, raw materials, and additives.

Raw materials that may be incorporated into asphalt include: clay, silt, sand, gravel and crushed stone produced from naturally occurring geologic formations, and without additives, recycled asphalt concrete, portland concrete cement, recycled sediments from asphalt plant scrubber operations, fines from fabric filter operations, asphalt cement, and hydrated lime. All of these materials have been incorporated into asphalt during past performance testing and the emissions from their use is accounted for in the emission factors used to quantify emissions.

The fuels allowed for combustion include: natural gas, propane, methane, butane, gasoline, kerosene, diesel fuel, jet fuel, fuel oils (No. 1, No. 2, No. 3, No. 4, No. 5 and No. 6), petroleum derived waste oil as defined in Minn. R. 7045.0020, subp. 102b, and on-specification

used oil as defined in Minn. R. 7045.0020, subp. 60a except that total halogens shall not exceed 1000 ppm. Since emission factors are available or may be reasonably estimated for all of these fuel types, it is reasonable to allow their use by hot mix asphalt facilities. Facilities must follow all other applicable rules such as those found in Minn. R. 7045.0695 when utilizing used oil as a fuel source. Past permits have allowed up to 500 parts per million of lead in the used oil. Lead levels in used oil have been dropping as the use of regular gasoline decreases. A recent survey of several used oil marketers found that lead levels in waste oil typically supplied to asphalt plants average about 50 parts per million. Most asphalt producers are currently using on-specification used oil according to an informal survey of several producers. On-specification used oil has maximum allowable lead levels of 100 parts per million under Minn. R. 7045.0020, subp. 60a. A maximum total halogen concentration of 1000 ppm was chosen because under Minn. R. 7045.0695, used oil containing greater than 1000 ppm halogens is presumed to have been mixed with a hazardous waste and is subject to further requirements under chapter 7045 unless the presumption is rebutted.

Additives that may be incorporated into asphalt include:

- silicone (an anti-foaming agent added to asphalt cement in quantities of 1 ounce per 5000 gallons);
- organic soaps (an anti-stripping agent added to the asphalt cement typically made from rendering of animal fats - usually makes up less than two percent by weight of the asphalt cement);
- other substances of a similar nature to silicone and organic soaps.

Since these additives are used in very small quantities and are intended to stay in the asphalt mix, the effect on air quality is minimal and it is reasonable to allow their use.

It is reasonable to waive performance testing of some materials because it is impossible to anticipate the desired use of all possible materials whose impact on the environment is the same or less than those listed as designated materials. It is anticipated from past requests that the waiving of performance testing would be unusual.

It is reasonable to require performance testing for additional fuels, materials and additives to determine the actual emission rates of pollutants of concern for registration permit holders. Registration permit option D holders must calculate actual emissions of all pollutants on a monthly basis. If emission factors do not exist for the alternative material, fuel, or additive; then it is the responsibility of the owner or operator to develop those emission factors, through performance testing. There may be instances where a materials balance may be sufficient to determine the emission rates. If an alternative material has been tested at one facility and emission rate increases are negligible with the use of the alternative material, then it is the intent of this section that other similar facilities would be able to use the nondesignated material under the same conditions.

It is reasonable to require requests for alternative materials be made a minimum of 60 days in advance of its anticipated use to allow adequate time for MPCA review of the request. Some requests may be approved or disapproved in less than 60 days depending on the nature of the request. The MPCA has developed a material burn request form which asks for information about the material to be used such as a determination if the material is a hazardous waste, the quantity of use, the physical properties of the material, its composition, and an estimate of the

emissions from the use of the material. Asphalt plant owners or operators using this provision will be asked to submit the material burn request form as part of the request to process materials not designated in the rule.

It is reasonable to require records of the actual amount of all materials, additives, and fuels used on an annual basis in order to determine compliance with this part. This information is already compiled by most hot mix asphalt plant owners and operators. It is reasonable to require these records to be kept for five years so that the MPCA can check the records to verify compliance with the requirements of this part.

6. 7011.0915 Test Methods

This part is repealed and the content under this part has been moved under a newly created part 7011.0920 Performance Test Procedures so that all requirements relating to performance testing would be located in one section for ease of use.

7. 7011.0917 Asphalt Plant Control Equipment Requirements

The intent of this part is to place greater focus on the proper operation and maintenance of the control equipment. Following the proposed requirements will best ensure the plant is in compliance with emission limits on a day to day basis. Many of the proposed requirements for the maintenance of control equipment are based on EPA and National Asphalt Pavement Association guidance documents. The Control Equipment Rule (Minn. R. 7011.0060 to 7011.0080) was used as the framework for establishing the specific control equipment requirements for asphalt plants that are contained in this proposed part.

Subpart 1 Operation of Asphalt Plant Control Equipment

It is reasonable to require operation of the control equipment whenever the process equipment is operating. Without control equipment on the drum dryer, the uncontrolled emissions for the majority of plants exceed the emission limit allowed by the state rule for industrial process equipment (Minn. R. 7011.0730 to 7011.0735). Uncontrolled emissions from the drum dryer are 32 lb/hour for a batch plant (AP-42). To meet the industrial process equipment rule, (Minn. R. 7011.0730) a batch plant could produce no more than 40 tons/hour - which is a very small amount. The MPCA knows of no asphalt plants operating in Minnesota without control equipment.

Members of the asphalt work group estimate that less than 20 plants in the state have all of the original manufacturer's process and control equipment. For this reason it would be difficult to require all plants to operate within the manufacturer's specifications for the monitored parameters as Minn. R. 7011.0075 does. To specify an operating range by rule for each type of control equipment is not workable either. For example, a baghouse using reverse air will have a higher pressure drop range than a pulse flow. To specify a range that will be wide enough to cover most control equipment types is meaningless. The proposed rule allows the plant to submit to the MPCA, an alternative to the manufacturer's specified range that is most appropriate for their equipment and to base the range on two years of historical data. The request for an alternative range will include a summary of the actual values of the monitored parameters for the past two years. All work group members felt that the ability to propose an alternative monitoring parameter range was acceptable and reasonable.

The MPCA has the authority to ask the company for supporting data if the range submitted seems to be out of line with other similar control equipment monitoring ranges. Examples of supporting data may be technical information from a control equipment manufacturer or supporting documentation from an article in peer reviewed technical literature. In the unusual circumstance that sufficient supporting data is not available, the MPCA may request a performance test to demonstrate that the control equipment can meet the applicable emission limit when operating control equipment in the range requested by the asphalt plant.

This subpart is reasonable because it allows flexibility to account for the individual differences between facilities and yet preserves the MPCA's ability to disallow a proposed range which may endanger human health or the environment or subject the asphalt plant to different applicable requirements or requirements under chapter 7007.

Subpart 2 Maintenance of Asphalt Plant Control Equipment

This subpart sets forth minimum maintenance requirements for asphalt control equipment. Proper maintenance of control equipment is vital to ensure the hot mix asphalt plant is in compliance with the applicable particulate matter emission limit on a daily basis.

A. The requirement to do a thorough annual inspection of the control equipment is reasonable because this is an activity that plants already do to ensure proper operation of equipment before the start of an operating season. A thorough inspection of the control equipment can only be made when it is not operational.

B. A monthly inspection of all ducts, connections and housings for leaks will detect leaks so that the proper maintenance procedures may be taken to prevent dust and other pollutants from escaping through holes.

C. Monitoring equipment is required to be checked daily to ensure the control equipment is operating in the proper range. These monitored parameters are surrogate parameters used to determine if an asphalt plant is meeting its emission limit. A daily frequency is reasonable and has been the frequency specified in past permits issued to this industry.

D. It is reasonable to require annual calibration of monitoring devices to have accurate readings of the monitored parameters.

E. The maintenance requirements for fabric filters are reasonable for the following reasons. Asphalt plant operators typically make daily walk around inspections of their hot mix asphalt plants. Outside observations can detect whether the mechanics of the bag cleaning system inside is functioning as designed. Internal inspections are necessary to determine if bags have become loose, torn, or worn; thereby causing particulate matter to escape that would otherwise be filtered. A pressure drop gauge will not necessarily indicate a bag failure.

F. The performance of a scrubber depends in part on the clarity of the water. For this reason it is reasonable to require daily checks of the pond depth and the turbidity of the water. Sediment in the pond should not exceed one half of the pond depth based on guidance from the National Asphalt Pavement Association Information Series 52 and 52A and EPA's Operation and Maintenance Guidelines for Asphalt Concrete Plants. The pH of the water affects the corrosion rate of the scrubber equipment. By checking the pH weekly, the operator can maintain the scrubber water at the proper pH to minimize corrosion. Because of the wear caused by the water flow and the corrosively of the water, the owner/operator is required to check on a monthly basis those parts that, if worn, affect the performance of the scrubber.

G. It is reasonable to require operators to check the exhaust plume daily as it is an indicator of control equipment performance and of operating parameters. For instance if a blue haze is seen, the operator may be operating too hot and may need to lower the temperature in the drum. The blue haze is caused by volatile organic compounds condensing to form a fine liquid aerosol.

It is reasonable to require records of the above activities in A through G to ensure that these activities are being conducted properly and with the required frequency.

Subpart 3 Installation of Monitoring Equipment

This subpart requires the owner/operator to install and operate equipment to monitor key control equipment parameters whenever the hot mix asphalt plant is in operation. The required parameter(s) is(are) specified in Minn. R. 7011.0911 subp. 6. The monitoring equipment required shall be installed within 30 days of the effective date of the rule. Asphalt work group members felt this was a reasonable time frame. Monitoring equipment is necessary to be able to determine if the asphalt control equipment is operated properly and is working effectively. It is reasonable to require the owner or operator to install and operate monitoring equipment for the control devices for the following reasons: (1) the operation of the monitoring equipment is required to determine if the control equipment is performing properly, (2) the control equipment is needed to meet the emission limit, and (3) credit for emissions reduction due to proper operation of the control equipment is taken by the owner or operator of the stationary source for fee purposes and permit applicability.

This subpart also requires the hour meter on the dryer burner to be installed within 30 days of the effective date of this rule for plants in operation on the effective date of the proposed

rule. This is reasonable because it is an inexpensive device (about $60) that is not difficult to install.

Subpart 4 Operation of Monitoring Equipment

This subpart requires the operation of the monitoring equipment for the control devices at all times the control equipment is required to operate. This is reasonable since the parameters the monitoring equipment tracks are used as surrogate parameters to determine compliance and if they are not operational the compliance status is unknown.

Subpart 5 Shutdown and Breakdown Procedures

This subpart requires the owner/operator to comply with the shutdown and breakdown procedures as set forth in Minn. R. 7019.1000. Minn. R. 7019.1000 establishes when and how the owner or operator of a stationary source notifies the MPCA in the event of shutdown or breakdown of control equipment. It is reasonable to require hot mix asphalt plants to notify the MPCA if the control equipment will be shutdown or has broken down. Minn. R. 7019.1000 has always applied to asphalt plants with control equipment. Reference to Minn. R. 7019.1000 is included in this rule to include in the performance standard all of the most pertinent rules applying to asphalt plants.

Subpart 6 Deviation of Asphalt Plant Control Equipment From Operating Specifications

This subpart requires the owner or operator to report when the control equipment monitored parameters do not comply with the operating specifications. The parameters to be monitored are those set forth in the proposed rule under Minn. R. 7011.0917 subp. 7 or a permit issued under Minn. R. ch. 7007. Deviations may indicate that the emissions unit or control equipment is not operating as well as it can and should. Corrective action may be

recommended. Deviations may also indicate an event during which significant quantities of pollutants are emitted from the stationary source, and the MPCA should be aware of such occurrences.

As a result of a report of deviations, the commissioner or administrator may request that owner or operator conduct performance tests to better quantify the emissions and control efficiency that is being achieved by the control equipment. The commissioner may request that the owner or operator of a hot mix asphalt plant with a registration permit to obtain a state permit with more stringent compliance requirements. The reason for doing this is to better regulate a source with repeated deviations. It is reasonable to require the owner or operator of a stationary source report deviations from operating specifications because these deviations may be indicate a problem that needs attention.

Subpart 7 Monitoring and Record Keeping for Asphalt Plant Control Equipment

This part sets forth the minimum monitoring and record keeping requirements for an owner or operator of a hot mix asphalt plant. This part requires the owner or operator to include in the records the specified range of operation for operating parameters, and requires that the records be kept for five years after the date on which the record is made.

In order for the owner or operator of a stationary source to receive credit for emission reductions due to the operation of control equipment, when applying for a permit or permit amendment, the operation of the equipment must be required by an applicable rule and the source must be able to demonstrate that the equipment is operated properly and is working effectively. This subpart specifies what records the owner or operator must keep to demonstrate that the pollution control equipment is operated properly and working effectively.

All of the monitored parameters are indicators that the equipment is operated properly and is working effectively, and were selected because the MPCA has for years routinely required that these parameters be monitored for the specific control equipment in permits. Some indicators provide information about the degree of effectiveness of the equipment, the pressure drop in a baghouse for example. If the pressure drop is too low, it may be indicating that there is a tear in a bag resulting in higher emissions than one that is in good condition. If the pressure drop is too high, the bags may need to be cleaned. If the pressure drop is within the specification range, it is reasonable to assume that the baghouse is meeting the designed particulate removal efficiency.

The monitored indicators act as a surrogate to monitoring the actual emissions of particulate matter or VOCs. (An afterburner is included as a VOC control device on asphalt plants. However, at this time, the MPCA is not aware of any asphalt plants using this technology nor if the technology is feasible for all asphalt plants. It is included in case the technology should become viable in the future.) It is not possible to continuously monitor particulate matter emissions. At $1500 to $2000 base cost for a particulate matter performance test, it is prohibitively expensive for most small sources to test the stack emissions (particulate matter) on a regular (monthly) basis. For these reasons, it is reasonable to monitor a control equipment parameter (surrogate) that indicates whether the equipment is working or how well it is working.

This part requires the parameters for particulate matter control equipment to be monitored and the results of the monitoring recorded on a calendar day basis. Although these systems can fail suddenly resulting in significant emissions, it is more likely that the performance of the

system will deteriorate (plug or need cleaning) to the point where it is not as effective as it is when it is in good condition. The period of time over which this typically occurs is much greater than 24 hours. These are control systems for which the monitored parameter indicates how well the system is working. The monitoring indicates how well the system is working, the owner or operator can anticipate when the control equipment will need servicing and maintenance and can keep the control equipment in a (good) condition at which it is reasonable to assume that the control equipment can achieve the assigned control efficiency. For these reasons, it is reasonable to require daily, instead of continuous monitoring of these control equipment parameters.

This part requires the monitored parameters for pollution control by combustion (afterburners) to be monitored continuously. It is reasonable to require continuous monitoring of these parameters because the emissions from these sources is very dependent on the combustion conditions. If the proper combustion conditions are not continuously maintained, the emissions from that source can increase quickly and dramatically. The speed with which the combustion conditions can change requires very frequent (continuous) monitoring. These are control systems for which it is reasonable to assume that the emissions reductions are being achieved if the system is working. Therefore, if the system is not working, it is also reasonable to assume that no emissions reduction is being achieved. For these reasons, it is reasonable to require continuous monitoring of the control equipment parameters.

8. 7011.0920 Performance Tests

Subpart 1 Methods and Procedures

This subpart references the performance test rule found in Minn. R. 7017.2001 to 7017.2060. The methods referenced are not changed from past methods required for particulate

matter and opacity performance tests at hot mix asphalt plants. This part will replace Minn. R. 7011.0915. The wording under Minn. R. 7011.0915 was identical to that in Minn. R.. 7011.0720 except Minn. R. 7011.0720 also references Method 9 for visual determination of opacity. It is for consistency that the opacity method be referenced and it is in keeping with the goal to repeat rule language as little as possible to reference another more general rule. The performance test rule requires that facilities use the test methods required by the applicable standard in Minn. R. 7017.2050, subp. 1.

The test methods under Minn. R. 7011.0720 apply to existing asphalt plants, because the performance standards for existing plants are based on the standards in Minn. R. 7011.0700 to 7011.0735. The federal new source performance standard that is incorporated by reference for new asphalt plants lists the test methods that are required. This rule amendment deleting Minn. R. 7011.0915, therefore, does not change the applicable test methods that have applied to asphalt plants.

Subpart 2 Performance test frequency for hot mix plants that use fabric filters

This subpart establishes performance test frequency for all asphalt plants based on the type of control equipment they use. Plants with wet control systems will be required to test more frequently than those with baghouses because the performance of the wet control systems is less reliable and deteriorates more rapidly if not well maintained. Analysis of 99 asphalt plant performance tests conducted after 1991 in Minnesota showed that tests in which the control device was a wet system did not meet the particulate matter emission limit in 36 percent of the performance tests. Performance tests in which a baghouse controlled emissions, however, were below the particulate matter emission limit in every case. Average total emissions from

performance tests at asphalt plants with baghouses were significantly below those at plants with wet systems. (See Appendix C)

A baghouse following the operation and maintenance guidelines proposed in this rule should always meet its particulate matter emission limit. One goal of this rule is to promote the use of the least polluting plants and test data shows that in a majority of cases a baghouse better controls particulate emissions. The lesser frequency of testing provides an incentive to owners and operators of asphalt plants with wet systems to install to baghouses. Past performance test data from 49 tests showed that every plant with a baghouse (regardless of whether it was new or existing) met the new source performance standard for hot mix asphalt plants. Therefore, it is reasonable to require testing only at the request of the MPCA. The MPCA has general statutory authority to require tests in Minn. Stat. § 116.07, subd. 9, and general rule authority to require testing in Minn. R. 7017.2020, subp. 1. Given the high compliance rate for asphalt plants equipped with baghouses, the MPCA does not believe that it is necessary to establish a regular frequency of performance testing in this rule. The MPCA will require testing by these asphalt plants when specific circumstances arise for individual plants that warrant conducting a test. Reasons to require testing of a plant with a baghouse could include, for example, noncompliance with the control equipment maintenance requirements proposed in this rule or opacity violations.

Currently no emission standards exist for VOCs or hazardous air pollutants from asphalt plants, and therefore performance testing typically has not been required for these pollutants in the past. The performance test frequencies proposed in this rule apply only to particulate matter.

Subpart 3 Performance test frequency for hot mix plants that use control equipment that uses liquid to remove pollutants

Frequency of performance testing for hot mix asphalt plants with wet systems is based on the annual production throughput for the asphalt plant. More extensive preparation of the process and control equipment typically occurs before testing with a wet control system as opposed to a baghouse. More rapid deterioration in the performance of the wet system equipment can occur due to factors such as corrosion. Considerable attention and daily maintenance of a wet system is needed to maintain a high degree of particulate matter (PM) removal efficiency. Therefore, it is reasonable to have increased performance test frequency for plants with wet system control to ensure they are complying with applicable emission limits.

It is reasonable to have the largest producing plants with wet systems test more frequently since the impact on the environment is greater if the larger producer is not in compliance with the emission limit. Larger producers are more likely to have the resources to conduct the stack testing as required. It is not reasonable to specify a performance test frequency for the smallest asphalt plants. These small producers are often located in areas of low population density where the demand for asphalt production is weak. These producers often have a difficult time finding a job for the quantity of asphalt needed for the required duration of the performance test. Also, the market for an asphalt plant is limited by the distance a truck can haul the asphalt to the job site and still maintain the proper temperature for laying the asphalt. More frequent performance testing may be too much of an economic burden for the smallest plants and could mean a lack of low cost asphalt in these smaller communities. At a work group meeting, MPCA staff proposed less than 35,000 tons production or 100 tons per hour rated capacity at five percent moisture as

the cut off to define a small plant. The work group members accepted this as a reasonable criteria to define a small plant.

The MPCA has general statutory authority to require tests in Minn. Stat. § 116.07, subd. 9, and general rule authority to require testing in Minn. R. 7017.2020, subpart 1. The MPCA will require testing by these asphalt plants when specific circumstances arise for individual plants that warrant conducting a test. Reasons to require testing of a small plant could include, for example, noncompliance with the control equipment maintenance requirements proposed in this rule or opacity violations. It is reasonable to not specify a required regular testing frequency for these plants, because their small levels of production produce less total emissions, and individual plants that are of concern to the MPCA can always be required to test to verify compliance with the performance standard.

The test frequency for plants with wet systems is as follows:

- as requested by the MPCA if they produced less than 35,000 tons/year in each of the three previous calendar years and have a manufacturer's rated capacity of less than 100 tons/hour at five percent moisture
- once every three years if they produced less than 100,000 tons per year in any of the three previous calendar years . (For example, if the last test was conducted in 1994, the plant would be required to test before the end of the 1997 calendar year.)
- once every two years if they produce less than 200,000 tons per year in any of the three previous calendar years. (For example, if the last test was conducted in 1994, the plant would be required to test before the end of the 1996 calendar year.)

- once every year if they produced more than 200,000 tons per year in the previous calendar year. (For example if an asphalt plant produced 210,000 tons in 1995, it would be required to test within 60 days of beginning operation in 1996.)

Since the effective date of this part is expected to be late 1995, any plant with a wet system that would be required to test in 1995 under the above schedule would be allowed to complete the test before the end of 1996.

The tonnage figures were chosen based on average tonnage figures reported by plants operating in Minnesota for the MPCA Emissions Inventory Summary from 1990 to 1994. Twenty five percent of all plants reported tonnage less than 35,000 tons per year for the period. About 50 percent of all plants had tonnage less than 100,000 tons per year. Seventy five percent of plants had tonnage less than 170,000.

This subpart like all other subparts of the proposed rule which require a plant to use operational data to determine applicability intends that only the operational data gathered while operating in Minnesota be used to determine applicability. In this subpart production tonnage from other states is not used to determine test frequency. Here is an example of how this subpart would be applied. An asphalt plant with a wet scrubber produced 95,000 tons in 1994, 1995, and 1996 while operating in South Dakota and did not conduct a performance test in any of those three years. The plant had last operated in Minnesota in 1991 and had conducted a performance test in 1991. If the plant takes a job in Minnesota in 1997, it would be required to test in 1997 under item B since it had not conducted a performance test in the previous three years. This test would need to be completed before the end of the 1997 calendar year. This is reasonable because, while the plant was operating in South Dakota it would not be required to follow the

maintenance requirements for wet systems in the proposed rule. The condition of the plant is critical to ensuring proper operation. Therefore, a performance test is necessary to ensure the plant is capable of meeting the applicable emission limit.

Subpart 4 Performance test required for all hot mix plants

Subpart 4 will require all plants to have conducted a performance test at least once since January 1, 1991, and demonstrated compliance. This ensures that all plants have tested within a recent time frame since performance test frequency will not be specified for plants with baghouses or plants with wet systems which produce less than 35,000 tons per year. January 1, 1991, was chosen as a cut off date because it will mean that all plants issued Title V operating permits will have tested within the last five years at the time of application (February 15, 1996). This levels the playing field and requires every plant regardless of permitting status to have tested in the last five years.

Past MPCA policy has been to require testing of asphalt plants every five years. However, because the testing requirements were imposed through permitting, the actual frequency of testing varied depending on when the permit was issued. A performance test is the primary way asphalt plants demonstrate compliance with particulate matter and opacity standards. Testing will be conducted before the end of the 1996 season. This is reasonable since the majority of plants operating in Minnesota have already conducted a performance test since January 1, 1991. Allowing a period of over one year from the anticipated effective date of this part will provide ample time for a plant to schedule a performance test.

Since asphalt plants frequently move in from neighboring states, it is reasonable to require that they shall have tested at least once in accordance with Minn. R. 7017.2001 to

7017.2060. Because neighboring states have different requirements for performance test frequency, it is important to ensure that they have meet the same standards when operating in Minnesota as plants that operate in Minnesota at all times.

9. 7011.0922 Operational Requirements and Limitations From Performance Tests

This part establishes production limits based on average throughput during testing and dictates how compliance shall be demonstrated. Existing permit language varies widely. Some older permits have language which does not limit the plant to the tested throughput while newer permits do limit plants to the average throughput of the most recent performance test during which compliance was demonstrated. It is reasonable to establish a consistent production limit through rule since the production throughput is the primary factor in determining the highest particulate matter emissions.

Subpart 1. Throughput limit and subpart 3, Monitoring and Record keeping

Subpart 1 establishes a throughput limit based on the most recent performance test which demonstrated compliance. This is reasonable, because asphalt plants should not be allowed to operate at a throughput level that exceeds the level at which the plant last demonstrated compliance. The provisions in this rule specify that compliance with the throughput limit is established on a calendar day basis.

Subpart 3 sets forth the requirement to operate an hour meter which is installed on the high fire mode of the dryer burner at all times the dryer burner is in operation and to record each day the burner is operated the total number of hours operated for that calendar day. It is reasonable to require the tracking of the hours since it is a parameter used to determine compliance with the production rate limit in subpart 1. The owner or operator of the asphalt facility must install an accumulating hour meter gauge which will be tied into the operation of

the dryer burner, on "high" fire mode. (Cost of an hour meter is about $60.) This will provide the most accurate means of obtaining the total hours of operation for any given period. The owner or operator must record the start and stop values on the meter during the operating day. By dividing the total tons of asphalt produced during the calendar day by the total hours of operation, as determined from the accumulating hour meter, the result will be a number representing the average tons per hour of asphalt produced for that calendar day

The average tons per hour of asphalt produced must be less than the production rate approved by the MPCA. Since plants rarely operate at maximum capacity throughout the day, this will allow plants more flexibility in how they operate and yet still ensure that applicable emission limits are being met. The daily operation and maintenance requirements proposed in this rule will help to ensure daily compliance with emission limits. All plants must of course comply with all other applicable rules such as opacity and Minnesota ambient air quality standards at all times regardless of allowed throughput.

Subpart 2 Certain exceptions to throughput limit

Subpart 2 allows owners and operators to request additional production throughput increases over their tested rate which are dependent on how much below the permitted emission limit they tested at. All plants are allowed a 10 percent increase over their tested production throughput rate if their tested emission rate was less than 80 percent of their emission limit. This is reasonable because increases in emission rates are not directly proportional to increases in the production rate and it provides an incentive to all owners and operators to employ practices and equipment to reduce their emission rate. It is also reasonable to allow these increases in

throughput only where an asphalt plant has shown through performance testing that it is significantly below the allowed emission limit.

The data from the 1991 - 1994 performance tests were analyzed to determine if additional production rate increases were justified. The data were divided into air pollution control equipment subdivisions, i.e. baghouse and wet system. The analysis showed that, in general, particulate matter emissions were controlled better by a baghouse than a wet system (see Appendix C). If a plant has a baghouse and it is properly maintained, the test data shows it will meet the NSPS limit of 0.04 gr/dscf with low dependence on the throughput. Wet systems are less efficient as production rates increase. As the pressure drop across a wet system rises, the production capability goes down. The performance of a baghouse has much less dependence on the production rate. The production rate of an asphalt plant may be limited by the baghouse, but the inherent design of a baghouse allows a finite amount of particulate to be exhausted to the atmosphere. Based on these results, plants with fabric filter control will be allowed production rate increases of 15 percent and 20 percent respectively over the tested production throughput depending on how much below the emission limit the plant demonstrated compliance during its most recent performance test conducted after January 1, 1991.

CHANGES TO CHAPTER 7007

10. 7007.1110 Registration Permit General Requirements

Supb. 2. Stationary sources that may not obtain a registration permit

It is reasonable to allow asphalt plants subject to the NSPS for Hot Mix Asphalt Plants (40 CFR 60 Subpart I) to receive a registration permit because the NSPS plants are the newer, less polluting plants with a stricter emission limit for particulate matter. The proposed

performance standard requires all owners and operators of asphalt plants to properly operate and maintain their plant to achieve compliance on a day to day basis. The type of permit issued will not affect the applicable requirements for the plant, which include the entire asphalt plant standard of performance, as amended in this rule proceeding. It is reasonable to allow eligible asphalt plants to receive a registration permit, which is the most streamlined permit option available to allow MPCA resources to be devoted to the most polluting plants and to promote pollution reduction by making available a simplified permit to all asphalt plants with low actual emissions.

11. 7007.1110 Registration Permit Option D

Subpart 2(F) Application Content

Subpart 3(F) Compliance Requirements

These parts are changed to allow asphalt plants with control equipment to comply with the industry specific control equipment requirements in this hot mix asphalt performance standard rather than the generic Control Equipment Rule (Minn. R. 7011.0060 to 7011.0080). This is reasonable because the proposed rule requires maintenance requirements specific to the asphalt industry which are necessary to ensure environmentally responsible operation. Control efficiency credit is not necessary for the hot mix asphalt plants since each plant is required to undergo performance testing and will use the particulate matter emission rate of the performance test to calculate actual emissions to determine eligibility for the registration permit. This is reasonable since performance test results at a specific facility are a more accurate measure of the plant's actual emissions than applying an assumed generic control efficiency. These amendments make clear that asphalt plants that obtain Option D registration permits need to

follow the control equipment requirements specifically tailored to the asphalt industry, rather than the generic control equipment standard set forth in Minn. R. 7011.0060-.0080.

V. IMPACTS ON SMALL BUSINESSES

The MPCA is required to consider the impacts of proposed rules on small businesses:

Minnesota Stat. § 14.115, subd. 2 requires the MPCA, when proposing rules which may affect small businesses, to consider the following methods for reducing the impact 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 requirements for small businesses;

(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 in the rule; and

(e) the exemption of small businesses from any or all requirements of the rule.

The proposed rules will affect small businesses as defined in Minn. Stat. § 14.115. As a result, the MPCA has considered the above-listed methods for reducing the impact of the rule on small businesses.

As stated earlier in this Statement of Need and Reasonableness, the objective of these revisions to the hot mix asphalt performance standard is to simplify compliance requirements for asphalt plants receiving the registration permit and to streamline compliance requirements for the

asphalt industry in general. The majority of asphalt plant owners and operators are small businesses.

There are three areas in which the proposed rules reduce the burden on small businesses. (1) Without the provision in the performance test frequency section of the proposed rule, owners and operators of asphalt plant that produce less than 35,000 tons per year (small businesses) would be required to test at the same frequency as larger plants, as they have in the past. The proposed rule will allow the smallest plants with wet systems to test only as requested by the MPCA. (2) Low actual emissions are typically found at the smaller sources. The proposed rule will allow all asphalt plant operators regardless of NSPS applicability to receive a registration permit if they meet the eligibility requirement of low actual emissions, these small businesses will qualify for a permit type with a simplified application form and more flexibility in operational practices. (3) The proposed rule will consolidate and simplify compliance and recordkeeping requirements by creating a operation and maintenance requirements section tailored to asphalt plants rather than requiring compliance with the more generic requirements in the control equipment rule that other registration permit recipients with control equipment must follow (Minn. R. 7011.0075). Some of the requirements in Minn. R. 7011.0075 which are costly and meaningless when applied to the asphalt industry were eliminated.

VI. ECONOMIC IMPACTS EVALUATION

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

> In exercising all its powers the pollution control agency shall give due consideration to the establishment, maintenance, operation and expansion of business, commerce, trade, industry, traffic, and other economic factors and other material matters affecting the feasibility and practicability of any proposed action, including, but not limited to, the

burden on a municipality of any tax which may result therefrom, and shall take or provide for such action as may be reasonable, feasible, and practical under the circumstances.

In proposing these rules, the MPCA has given due consideration to available information as to any economic impacts the proposed rules would have. The streamlined requirements and eligibility for registration permits is expected to reduce the costs of compliance for the asphalt industry, as described in the prior section in more detail. As mentioned in the Introduction, the goal of this rule making is to streamline compliance requirements and to promote the use of the least polluting plants. The economic impact will depend on the type of control equipment the asphalt plant owner now employs and the practices it has been utilizing.

Operators and owners of all asphalt plants will be required to install an hour meter on the drum dryer burner. Some plants already have this installed. The cost of this meter is estimated to be $60.

For owners and operators of asphalt plants with fabric filter control devices, the costs for particulate matter performance testing will likely decrease since testing will not be every five years as it has in the past but will dependent on the facility's compliance status. The base cost of a performance test for opacity and particulate matter ranges from $1500 to $2000. The cost increases as the distance from the testing firm increases. Operation costs may decrease for owners of fabric filter plants because they will be able to operate in a mode that is more efficient if they are allowed increased rates of production based on low tested emission rates. The total amount of asphalt made is based on the number of jobs the owner has. Additional production rate increases may mean savings from lower fuel costs and less overtime work.

For owners and operators of asphalt plants with wet system control devices, the costs for performance testing will increase if they produce more than 35,000 tons/year. In the past all plants were required to test every five years. Because of the higher performance test failure rate and more intensive maintenance requirements, the increased testing frequency is based on throughput. Presumably those asphalt plants producing larger amounts of asphalt are more likely to have the resources to do performance testing on a more frequent basis. An asphalt plant with a wet system which produces 200,000 tons per year of asphalt would spend less than 0.07 percent of its revenue on an annual stack test, assuming asphalt is selling for $ 15 per ton.

Some asphalt plants may be testing sooner than they previously anticipated due to the proposed requirement that all plants test since January 1, 1991.

VII. IMPACT ON AGRICULTURAL LANDS AND FARMING OPERATIONS

Minn. Stat. § 14.11, subd. 2, requires that if the MPCA proposing adoption of a rule determines that the rule may have a direct and substantial adverse impact on agricultural land in the state, the MPCA shall comply with specified additional requirements. Similarly, Minn. Stat. § 116.07, subd. 4, requires that if a proposed rule affects farming operations, the MPCA must provide a copy of the proposed rule and a statement of the effect of the proposed rule to the Commissioner of Agriculture for review and comment. The MPCA believes that the proposed rules will not have any impact on agricultural lands or farming operations.

VIII. EXPENDITURES BY PUBLIC BODIES

The MPCA is required to consider the impacts of proposed rules on local public bodies:

> If the adoption of a rule by an agency will require the expenditure of public money by local public bodies, the appropriate notice of the agency's intent to adopt a rule shall be accompanied by a written statement giving the agency's reasonable estimate of the total cost to all local public bodies in the state to implement the rule for the two years immediately following adoption of the rule if the estimated total cost exceeds $100,000 in either of the two years. For purposes of this subdivision, local public bodies shall mean officers and governing bodies of the political subdivisions of the state and other officers and bodies of less than statewide jurisdiction which have the authority to levy taxes.
>
> Minn. Stat. § 14.11, subd. 1 (1992).

Local public bodies own or partly own many facilities that are required to obtain an air emission permit. MPCA records show that only two hot mix asphalt plants in the state are owned by cities. Both of these hot mix asphalt plants utilize wet systems to control particulate emissions. The estimated cost of the proposed rule revisions on all public bodies is less than $30,000 annually. Therefore, the provisions of Minn. Stat. § 14.11, subd. 1 do not apply.

IX. REVIEW BY COMMISSIONER OF TRANSPORTATION

Minn. Stat. § 174.05 requires the MPCA to inform the Commissioner of Transportation of all rulemakings that concern transportation, and requires the Commissioner of Transportation to prepare a written review of the rules. This requirement does not apply because this rulemaking does not affect transportation.

X. CONCLUSIONS

Based on the foregoing arguments, the proposed revisions to Minn. R.. 7007 and 7011 are both needed and reasonable.

XI. LIST OF APPENDICES, EXHIBITS, REFERENCES AND WITNESSES

In support of the need and reasonableness of the proposed rule amendments, the following witnesses will testify at any hearing that may take place in regard to these proposed rules:

1. Mary Jean Fenske: Ms. Fenske will testify on the general need for and reasonableness of the proposed rules.

2. Mr. Robert Berg: Mr. Berg will testify on the need and reasonableness of the changes to Minn. R. ch. 7011.0911.

3. Mr. Craig Averman: Mr. Averman will testify on the need and reasonableness of the changes to Minn. R. ch. 7011.0920.

Dated: July 24, 1995

CHARLES W. WILLIAMS
Commissioner

CWW:lmg

APPENDIX A

Hot Mix Asphalt - Process Description

(Summarized from EPA Proposed 5th Edition AP-42 emission factor guidance document - Section 11.1 published August 15, 1994.)

Hot mix asphalt (HMA) paving materials are a mixture of well graded, high quality aggregate (which can include reclaimed asphalt pavement [RAP]), and liquid asphalt cement, which is heated and mixed in measured quantities to produce HMA. Aggregate and RAP (if used) constitute over 92 percent by weight of the total mixture. Aside from the amount and grade of asphalt cement used, mix characteristics are determined by the relative amounts and types of aggregate and RAP used. A certain percentage of fine aggregate (less than 74 micrometers [μm] in physical diameter) is required for the production of good quality HMA.

Hot mix asphalt paving materials can be manufactured by: (1) batch mix plants, (2) continuous mix (mix outside drum) plants, (3) parallel flow drum mix plants, and (4) counterflow drum mix plants. This order of listing generally reflects the chronological order of development and use within the HMA industry.

An HMA plant can be constructed as a permanent plant, a skid mounted (easily relocated) plant, or as a portable plant.

Batch Mix Plants-- Raw aggregate normally is stockpiled near the plant. The bulk aggregate moisture content typically stabilizes between three to five percent by weight.

Processing begins as the aggregate is hauled from the storage piles and is placed in the appropriate hoppers of the cold feed unit. The material is metered from the hoppers onto a conveyer belt and is transported into a rotary dryer (typically gas-or oil-fired).

As the hot aggregate leaves the dryer, it drops into a bucket elevator and is transferred to a set of vibrating screens where it is classified and dropped into individual "hot" bins according to size. To control aggregate size distribution in the final batch mix, the operator opens various hot bins over a weigh hopper until the desired mix and weight are obtained. Reclaimed asphalt pavement may be added at this point also. Concurrent with the aggregate being weighed, liquid asphalt cement is pumped from a heated storage tank to an asphalt bucket.

The aggregate from the weigh hopper is dropped into the pugmill (mixer) and dry-mixed for 6 to 10 seconds. The liquid asphalt is then dropped into the pugmill where it is mixed for an additional period of time. Then the hot mix is conveyed to a hot storage silo or dropped directly into a truck and hauled to the job site.

As with most facilities in the mineral products industry, batch mix HMA plants have two major categories of emissions: those that are vented to the atmosphere through some type of stack, vent, or pipe (ducted sources), and those that are not confined to ducts and vents but are emitted directly from the source to the ambient air (fugitive sources). Ducted emissions are usually collected and transported by an industrial ventilation system with one or more fans or air movers, eventually to be emitted to the atmosphere through some type of stack. Fugitive emissions result from process and open sources, and consist of a combination of gaseous pollutants and PM.

The most significant source of ducted emissions from batch mix HMA plants is the rotary drum dryer. Emissions from the dryer consist of water as steam evaporated from the aggregate, PM, and small amounts of VOC of various species (including hazardous air pollutants [HAP]) derived from combustion exhaust gases.

Other potential process sources include the hot-side conveying, classifying, and mixing equipment, which are vented to either the primary dust collector along with the dryer gas or to a separate dust collection system. The vents and enclosures that collect emissions from these sources are commonly called "fugitive air" or "scavenger" systems. The scavenger system may or may not have its own separate air mover device, depending on the particular facility. The emissions captured and transported by the scavenger system are mostly aggregate dust, but they may also contain gaseous VOC and a fine aerosol of condensed liquid particles. This liquid aerosol is created by the condensation of gas into particles during cooling of organic vapors volatilized from the asphalt cement in the pugmill. The amount of liquid aerosol produced depends to a large extent on the temperature of the asphalt cement and aggregate entering the pugmill. Organic vapor and its associated aerosol are also emitted directly to the atmosphere as process fugitives during truck loadout, from the bed of the truck itself during transport to the job site, and from the asphalt storage tank. In addition to low molecular weight VOC, these organic emission streams may contain small amounts of polycyclic compounds. Both the low molecular weight VOC and the polycyclic organic compounds can include HAP. The ducted emissions from the heated asphalt storage tanks may include VOC and combustion products from the tank heater.

The choice of applicable control equipment for the dryer exhaust and vent line ranges from dry mechanical collectors to scrubbers and fabric collectors. Attempts to apply electrostatic precipitators have met with little success. Practically all plants use primary dust collection equipment with large diameter cyclones, skimmers, or settling chambers. These chambers are often used as classifiers to return collected material to the hot elevator and to combine it with the drier aggregate. To capture remaining PM, the primary collector effluent is ducted to secondary collection device. Most plants use either a baghouse or a venturi scrubber for secondary emissions control.

There are also a number of fugitive dust sources associated with batch mix HMA plants, including vehicular traffic generating fugitive dust on paved and unpaved roads, aggregate material handling, and other aggregate processing operations. Fugitive dust may range from 0.1 μm to more than 300 μm in aerodynamic diameter. On average, 5 percent of cold aggregate feed is less than 74 μm (minus 200 mesh). Fugitive dust that may escape collection before primary control generally consists of PM with 50 to 70 percent of the total mass less than 74 μm.

Parallel Flow Drum Mix Plants-- This process is a continuous mixing type process using proportioning cold feed controls for the process materials. The major difference between this process and the batch process is that the dryer is used not only to dry the material but also to mix the heated and dried aggregates with the liquid asphalt cement. Aggregate, which has been proportioned by gradations, is introduced to the drum at the burner end. As the drum rotates, the aggregates as well as the combustion products move toward the other end of the drum in parallel. Liquid asphalt cement flow is controlled by a variable flow pump which is electronically linked to the virgin aggregate and RAP weigh scales. The asphalt cement is introduced in the mixing

zone midway down the drum in a lower temperature zone along with any RAP and particulate matter (PM) from collectors.

The mixture is discharged at the end of the drum and conveyed to a surge bin or HMA storage silos. The exhaust gases also exit the end of the drum and pass on to the collection system.

Parallel flow drum mixers have an advantage in that mixing in the discharge end of the drum captures a substantial portion of the aggregate dust, therefore lowering the load on the downstream collection equipment. For this reason, most parallel flow drum mixers are followed only by primary collection equipment (usually a baghouse or venturi scrubber). However, because the mixing of aggregate and liquid asphalt cement occurs in the hot combustion product flow, organic emissions (gaseous and liquid aerosol) may be greater than in other processes. The most significant ducted source of emissions is the rotary drum dryer. Emissions from the drum consist of water as steam evaporated from the aggregate, PM, and small amounts of VOC of various species (including HAP) derived from combustion exhaust gases, liquid asphalt cement, and RAP, if utilized. The VOC result from incomplete combustion and from the heating and mixing of liquid asphalt cement inside the drum. The processing of RAP materials may increase VOC emissions because of an increase in mixing zone temperature during processing.

Once the VOC cool after discharge from the process stack, some condense to form a fine liquid aerosol or "blue smoke" plume. A number of process modifications or restrictions have been introduced to reduce blue smoke including installation of flame shields, rearrangement of flights inside the drum, adjustments of the asphalt injection point, and other design changes.

Process fugitive emissions associated with batch plant hot screens, elevators and the pugmill are not present in the drum mix processes. However, there may be minimal fugitive VOC emissions from the transport and handling of the hot mix from the drum mixer to the storage silo and also from the load out operations to the delivery trucks. Since the drum process is continuous, these plants must have surge bins or storage silos. The fugitive dust sources associated with drum mix plants are similar to those of batch mix plants with regard to truck traffic and aggregate material feed and handling operations.

Counterflow Drum Mix Plants--Figure 11.1-3 shows a counterflow drum mix plant. In this type of plant, the material flow in the drum is opposite or counterflow to the direction of exhaust gases. In addition, the liquid asphalt cement mixing zone is located behind the burner flame zone so as to remove the materials from direct contact with hot exhaust gases. Liquid asphalt cement flow is controlled by a variable flow pump which is electronically linked to the virgin aggregate and RAP weigh scales. It is injected into the mixing zone along with any RAP and particulate matter from primary and secondary collectors.

Because the liquid asphalt cement, virgin aggregate and RAP are mixed in a zone removed from the exhaust gas stream, counterflow drum mix plants will likely have organic emissions (gaseous and liquid aerosol) that are lower than parallel flow drum mix plants. A counterflow drum mix plant can normally process RAP at ratios up to 50 percent with little or no observed effect upon emissions. Today's counterflow drum mix plants are designed for improved thermal efficiencies.

The most significant ducted source of emissions is the rotary drum dryer in a counterflow drum mix plant. Emissions from the drum consist of water as steam evaporated from the

aggregate, PM, and small amounts of VOC of various species (including HAP) derived from combustion exhaust gases, liquid asphalt cement, and RAP, if used.

Because liquid asphalt cement, aggregate, and sometimes RAP, are mixed in a zone not in contact with the hot exhaust gas stream, counterflow drum mix plants will likely have lower VOC emissions than parallel flow drum mix plants. The organic compounds that are emitted from counterflow drum mix plants are likely products of a slight inefficient combustion, and can include HAP.

APPENDIX B

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APPENDIX C

Particulate Matter Emission Rates

Plants with Baghouses

No. of Perf. Tests	Dryer Burner Fuel	Front Half (gr/dscf)	Back Half (gr/dscf)	Total Emission Rate (gr/dscf)
2	No. 2	0.0083	0.0130	0.0213
5	No. 6	0.0130	0.0268	0.0397
11	Natural gas/propane	0.0119	0.0050	0.0169
29*	Used Oil	0.0110	0.0236	0.0346
47 Total	Average	0.0113	0.0191	0.0304

*31 total tests; two were removed from average because rates more than five times higher than any of the other tests.

Plants with Wet Systems

No. of Perf. Tests	Dryer Burner Fuel	Front Half (gr/dscf)	Back Half (gr/dscf)	Total Emission Rate (gr/dscf)
4*	No. 2	0.0925	0.0030	0.0955
7	No. 6	0.0822	0.0314	0.1136
16	Natural gas/propane	0.1044	0.0065	0.1109
22	Used Oil	0.0965	0.0343	0.1307
49	Average	0.0967	0.0223	0.1189

*Five tests total; one test was removed from average because rate was more than four times higher than any of the other tests.

Notes:

- emission rates listed are averages of the test data in each group
- gr/dscf means grains per dry standard cubic foot
- performance testing was conducted in Minnesota from 1991 through 1994

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ATTACHMENT 2

STATE OF MINNESOTA

POLLUTION CONTROL AGENCY

In the Matter of Proposed Rules Governing: (1) Registration Permits and (2) Standards of Performance For Hot Mix Asphalt Plants

SUPPLEMENT STATEMENT OF NEED

AND REASONABLENESS

I. INTRODUCTION

The MPCA Board authorized proposal of the above-captioned rule at its July 24, 1995, meeting. Prior to formal proposal of this rule, the MPCA staff determined that additional rule requirements are needed in the hot mix asphalt performance standard to maintain compliance with ambient air standards by plants that would become eligible under the new rules to receive a registration permit. Since the rule had not yet been public noticed, MPCA staff requested and received authorization to add to the proposed rules an additional rule part with specific requirements that will help maintain compliance by hot mix asphalt plants with the state and national ambient air quality standards. This supplement to the Statement of Need and Reasonableness explains the basis for this proposed additional part of the rule which address compliance with ambient air quality standards.

II. STATEMENT OF REASONABLENESS

A. REASONABLENESS OF THE RULE BY SECTION

1. 7011.0903 Compliance with Ambient Air Quality Standards

Subparts 1 and 2 of this part require demonstration of compliance with sulfur dioxide (SO_2) ambient air quality standards through the use of EPA's SCREEN3 model if fuel exceeding 0.70 percent sulfur content is burned by the asphalt dryer burner. If compliance is not demonstrated with EPA's SCREEN3 model, then the source has two options:

1) To limit the sulfur content of the fuel burned at the plant to 0.070 percent or less.

2) To obtain an individual permit (either a state permit or a Part 70 permit) with necessary source-specific restrictions that assure compliance with the ambient standards, or which is issued based upon demonstration of compliance with the standard through the use of refined modeling which is less conservative but more resource intensive than SCREEN3.

The ambient air quality standards are designed to protect the public health and the environment from the adverse effects of air pollution, and apply throughout the state. Without conditions to restrict sulfur dioxide (SO_2) emissions from hot mix asphalt plants, some asphalt plants that would become eligible to receive the streamlined registration permits as a result of this rule proposal might operate in violation of state and national ambient air standards for SO_2. The commissioner has the authority to prevent a stationary source from receiving a registration permit, or to revoke a registration permit, if source-specific permit conditions are necessary to ensure the source operates in compliance with ambient standards. It is the MPCA's intent, however, to issue registration permits to sources with low actual emissions, which includes many asphalt plants. This rule part is needed to add to state rule specific conditions in the hot mix asphalt performance standard that will provide means to ensure compliance with and to enforce state and national ambient air standards for SO_2 and other criteria pollutants, while still allowing most of the asphalt industry the benefit of eligibility for a streamlined registration permit.

Modeling shows that a small number of plants with stacks shorter than the industry standard may exceed ambient air standards even when burning fuel of less than 0.70 percent sulfur by weight. Subparts 4 and 5 address this problem. Subpart 4 addresses this by giving the commissioner the authority to require the owner or operator of an asphalt plant to apply for and obtain a different kind of permit other than a registration permit if the commissioner finds that additional source-specific conditions are needed to prevent violation of any ambient air quality standard (including those standards for criteria pollutants other than SO_2). It is reasonable to require a different kind of permit other than a registration permit in those cases where ambient air standards may be violated by a facility without the additional source-specific conditions that can be included in an individual permit and are needed to assure that the facility operates in compliance. Subpart 5 clarifies that the new rule part does not allow violations of the ambient air quality standards, which govern all sources in the state at all times. It is reasonable to clarify that the commissioner may request a hot mix asphalt plant to

demonstrate compliance with the ambient standards. This subpart is reasonable to assure that the MPCA retains the authority it already has to assure compliance with ambient standards, and that compliance with the ambient standards will be required in situations where the requirements of this rule part are not sufficient by themselves to achieve compliance at particular plants.

Subpart 3 requires that records be kept on site for five years of the fuel sulfur content modeled, the site modeled, and the model input and output files if the source is burning a fuel with a sulfur content of greater than 0.70 percent and does not hold a part 70, state or general permit. Subpart 3, which requires records of the sulfur content of fuel burned in the dryer burner, is reasonable because it allows compliance with the 0.70 sulfur content limit to be verified. It is not necessary for records to be kept for natural gas, methane, butane, propane, gasoline, kerosene, diesel fuel, No. 1 and No. 2 fuel oil, because their sulfur content is below 0.70 percent. It is reasonable to require that results of SCREEN3 modeling be kept for those plants which choose to burn a higher sulfur content fuel along with the supporting calculations to allow verification of compliance with this part where modeling of air emissions and demonstration of compliance with ambient standards is required before burning a high sulfur content fuel.

MPCA staff estimate less than 25 percent of plants currently burn fuel with a sulfur content greater than 0.70 percent. The most common high sulfur fuel burned by asphalt plants is No. 6 fuel oil which has a typical sulfur content of 1.4 to 2.0 percent by weight. Most hot mix asphalt facilities burn: 1) used oil which typically contains less than 0.70 percent sulfur, 2) distillate oil which contains up to 0.5 percent sulfur, or 3) natural gas which has a negligible sulfur content. The sulfur content of used oil typically is 0.50 percent and is rarely over 0.70 percent. The proposed rule is reasonable because it will not prevent the use of fuels with sulfur contents of greater than 0.70 percent; as long as the owner or operator using a high sulfur fuel demonstrates compliance with ambient air standards through use of a conservative model or obtains an individual permit which will likely require the owner/operator to perform refined modeling to verify compliance and may also impose any special conditions necessary to assure that the ambient standards are not violated.

The basis for choosing a threshold of 0.70 percent sulfur fuel as the threshold is described in the remainder of this section. At the request of EPA Region V staff in 1989, MPCA air quality staff investigated the impact on air quality of SO_2 emissions from hot mix asphalt plants. This industry

typically uses fuel oil or used oil and relatively short, large diameter stacks for portable plants to facilitate transporting the plants which frequently relocate.

The original investigation used a computer model to predict dispersion of SO_2 from the stacks and assumed that SO_2 was emitted at the maximum allowed by Minn. R. 7011.0610 (two pounds of SO_2 per million BTU of fuel burned which corresponds to about two percent sulfur by weight in the fuel).

The results indicated that the ambient air standard for SO_2 would be exceeded by virtually all hot mix facilities, if the emissions were at the limit allowed by Minn. R. 7011.0610. To determine actual emissions of sulfur dioxide from asphalt plants, performance testing was conducted at eleven hot mix asphalt facilities in 1990. Using the performance test data, staff modeled the impact on ambient air quality of the actual emissions. A summary of the emission data is shown in Table I of Appendix D.

All of the hot mix facilities in Table I were operating at or close to the maximum production capacity. The column labeled "Allowable SO_2" indicates the emission rate corresponding to Minn. R. 7011.0610 allowable emission rates. Clearly, the industry is not dependent on the current rule for limiting sulfur dioxide emissions, because the rule allows fuel up to about two percent sulfur by weight. Also, during the process, some of the sulfur is removed from the exhaust air by the control equipment and/or absorption by the aggregate itself. The aggregate can contain limestone-calcium carbonate, which reacts with the SO_2 and reduces SO_2 emissions to the atmosphere. Performance tests done in Minnesota on 11 asphalt plants, five had wet scrubbers and six had fabric filters, demonstrated a wide range of SO_2 removal. The average reduction in SO_2 emissions from the theoretical emission rate (if all the sulfur in the fuel were converted to SO_2) was 39 percent for fabric filters and 74 percent for wet scrubbers. All of the plants modeled had predicted SO_2 concentrations less than the ambient maximum one hour standard when background concentrations are not included. Background concentrations can vary widely in the state but 1994 information from monitors located in various locations in the state show that the typical range for the maximum one hour concentration was 85 to 194 ug/m^3 for monitors not located near refineries. The maximum one hour SO_2 concentration at monitors located near refineries was 298 to 381 ug/m^3. When the highest one hour background level concentration from 1994 is added to the values in Table I, it can be shown that in all cases the

predicted ambient air concentrations are below the one hour limit of 1300 ug/m^3. Based on the data in Table I and additional screen modeling done in 1993, the asphalt plant general permit developed by the MPCA in 1993 limited fuel sulfur content to 0.70 percent by weight.

New modeling done in 1995 showed that the 0.70 percent sulfur by weight threshold would eliminate the worst violations of the standard. Staff performed modeling performed on a "typical" asphalt plant burning a variety of fuels, at different production rates and with different control equipment. Predicted ambient air concentrations depend on many factors such as stack height, temperature of the exhaust gas, exit gas velocity, stack diameter and the rate of sulfur dioxide emissions. For modeling purposes, a 20 percent reduction in SO_2 was assumed for plants with baghouses and a 50 percent reduction for plants with scrubbers. For plants with baghouses, a nearby building with the dimensions of 20 feet high by 20 feet wide by 40 feet long was assumed. The same size building is also assumed for plants with scrubbers although the proximity and size of structures near the stack varies greatly for plants with this type of control. Buildings near a stack can cause increased ambient concentrations due to the effects of building downwash especially when the stack height is close to the height of the nearest building.

Results of the computer dispersion modeling shown in Table II of Appendix D predict that actual emissions will not cause a violation of the ambient air standards for fuels with a sulfur content of 0.70 percent or less provided reasonable stack dimensions are used. The modeling of actual emissions has shown that restricting the fuel sulfur content to 0.70 percent by weight will result in the majority of asphalt plants being in compliance with ambient standards for sulfur dioxide. Fuels with sulfur contents in the range of 0.70 to 1.4 percent sulfur were not modeled because very few plants are known to use fuels with sulfur contents in this range.

A restriction on the sulfur content of the fuel is a simple and clear requirement which will result in the majority of plants being in compliance with the SO_2 ambient air quality standard. However, some plants with shorter than modeled stacks and high production rates may approach or exceed the ambient standard when background concentrations are considered. A more thorough review of direct and indirect heating sources will be performed by the agency when those standards of performance are updated in the next two years. In the meantime, this proposed part is reasonable because it will prevent those sources from burning the higher sulfur content fuels unless they demonstrate through

SCREEN3 modeled attainment with the standard or obtain an individual permit which will require refined modeling or establish source-specific conditions that will assure compliance with the ambient standards, and because subparts 4 and 5 allow the MPCA to appropriately address noncompliance by individual sources.

SCREEN3 is a conservative model used to predict maximum one hour ambient air concentrations based on operating and design parameters such as maximum production rate, maximum sulfur content of fuel, and stack height. The program is available via National Technical Information Service (NTIS), Springfield, VA telephone (703)487-4650, or may be downloaded from the Support Center for Regulatory Air Models (SCRAM) Bulletin Board System. The SCRAM BBS may be accessed at (919) 541-5742. A copy may also be requested from the MPCA. The disk from the MPCA will include the program itself and instructions. The program is simple enough to be run by the owner or operator of an asphalt plant or a consulting firm could be used. (Cost for a consultant to run SCREEN3 is estimated to be $500 up to $1000 depending on the complexity of the source).

Dated: November 28, 1995

Charles W. Williams
Commissioner