

AIR EMISSION PERMIT NO. 02700001- 015
(MAJOR AMENDMENT)
IS ISSUED TO

American Crystal Sugar Company

American Crystal Sugar - Moorhead
2500 North 11th Street
Moorhead, Clay County, Minnesota 56560

The emission units, control equipment and emission stacks at the stationary source authorized in this permit are as described in the following permit application(s):

Permit Type	Application Date
Total Facility Operating Permit	January 13, 1995 & October 20, 1995
Administrative Amendment	April 15, 1998
Major Amendment	February 9, 1999

This permit amendment amends Air Emission Permit No. 02700001- 015 and authorizes the Permittee to operate and modify the stationary source at the address listed above unless otherwise noted in Table A. This amendment is a major modification to a major source under 40 CFR § 52.21. The Permittee must comply with all the conditions of the permit. Any changes or modifications to the stationary source must be performed in compliance with Minn. R. 7007.1150 to 7007.1500. Terms used in the permit as defined in the state air pollution control rules unless the term is explicitly defined in the permit.

Permit Type: Federal; Pt. 70	Major Amendment/NSR Authorization
Issue Date: March 10, 1998	May 13, 1999
Expiration: March 10, 2003	

All Title I Conditions do not expire.

Ann Foss for

Michael J. Sandusky
Division Manager
Air Quality Division

for Karen A. Studders
Commissioner
Minnesota Pollution Control Agency

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NOTICE TO THE PERMITTEE:

Your stationary source may be subject to the requirements of the Minnesota Pollution Control Agency's (MPCA) solid waste, hazardous waste, and water quality programs. If you wish to obtain information on these programs, including information on obtaining any required permits, please contact the MPCA general information number at:

Metro Area	(651) 296-6300
Outside Metro Area	1-800-657-3864
TTY	(651) 282-5332

The rules governing these programs are contained in Minn. R. chs. 7000-7105. Written questions may be sent to: Minnesota Pollution Control Agency, 520 Lafayette Road North, St. Paul, Minnesota 55155-4194.

Questions about this air emission permit or about air quality requirements can also be directed to the telephone numbers and address listed above.

PERMIT SHIELD:

Subject to the limitations in Minn. R. 7007.1800, compliance with the conditions of this permit shall be deemed compliance with the specific provision of the applicable requirement identified in the permit as the basis of each condition. If certain requirements have been determined to not apply they are listed in Table A of this permit.

FACILITY DESCRIPTION:

American Crystal Sugar Company (Company) owns and operates a sugar beet processing plant at 2500 North 11th Street, Moorhead, Clay County, Minnesota. In addition to this stationary source, the Company owns processing plants in both East Grand Forks and Crookston, Minnesota and also has a research center in Moorhead. The Moorhead plant consists of three coal-fired (subbituminous) boilers which produce process steam; two natural gas-fired pulp dryers; one pulp pellet cooler; pulp pellet handling, storage and loading equipment; one lime kiln (calciner); one lime slaker; one sugar dryer; one sugar cooler; ash removal systems and dry sugar storage, handling, and sacking equipment.

Particulate Matter (PM) emissions from the three boilers are controlled by electrostatic precipitators (ESP). Other pollution control equipment consists of a multiclone with a hopper-aspiration fabric filter system for each pulp dryer, a cyclone for the pellet cooler, a fabric filters for sugar storage and conveying, a cyclone for the lime kiln, and fabric filters for the sugar dryer and sugar cooler. Coal, coke and limerock are received by rail and stored in uncovered storage piles.

The Moorhead plant employs about 250 people and it operates from late August through May of each year, 24 hours per day. The plant will typically startup two to three days before starting to slice sugar beets and shutdown two to four days after beet slicing has stopped.

The Minnesota Pollution Control Agency (MPCA) issued the Title V permit for the Company's Moorhead facility on March 10, 1998. This permit amendment is for the elimination of operating hour restrictions on the sugar dryer, sugar cooler and pellet cooler. No new construction is requested nor granted with this permit.

An Environmental Assessment Worksheet (EAW) was required as a part of this permit application because the project is projected to result in a greater than 100 ton per year increase air emissions. An air emissions risk analysis (AERA) was conducted as a part of the EAW process to evaluate potential human and environmental health risks from the modified facility. The AERA focused on airborne pollutants from the facility other than the criteria pollutants.

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/13/99

Facility Name: American Crystal Sugar - Moorhead

Permit Number: 02700001 - 004

Table A contains limits and other requirements with which your facility must comply. The limits are located in the first column of the table (What To do). The limits can be emission limits or operational limits. This column also contains the actions that you must take and the records you must keep to show that you are complying with the limits. The second column of Table A (Why to do it) lists the regulatory basis for these limits. Appendices included as conditions of your permit are listed in Table A under total facility requirements.

Subject Item: Total Facility

What to do	Why to do it
Limits set as a result of a performance test (conducted before or after permit issuance) apply until superseded as specified by Minn. R. 7017.2025 following formal review of a subsequent performance test on the same unit.	Minn. R. 7017.2025
Performance Testing: Conduct all performance tests in accordance with Minn. R. ch. 7017 unless otherwise noted in Tables A and/or B.	Minn. R. ch. 7017
Monitoring Equipment: Install or make needed repairs to monitoring equipment within 60 days of issuance of the permit if monitoring equipment is not installed and operational on the date the permit is issued.	Minn. R. 7007.0800, subp. 4(D)
Monitoring Equipment Calibration: Annually calibrate all required monitoring equipment (any requirements applying to continuous emission monitors are listed separately in this permit).	Minn. R. 7007.0800, subp. 4(D)
Operation of Monitoring Equipment: Unless otherwise noted in Tables A and/or B, monitoring a process or control equipment connected to that process is not necessary during periods when the process is shutdown, or during checks of the monitoring systems, such as calibration checks and zero and span adjustments. If monitoring records are required, they should reflect any such periods of process shutdown or checks of the monitoring system.	Minn. R. 7007.0800, subp. 4(D)
Circumvention: Do not install or use a device or means that conceals or dilutes emissions, which would otherwise violate a federal or state air pollution control rule, without reducing the total amount of pollutant emitted.	Minn. R. 7011.0020
Shutdown Notifications: Notify the Commissioner at least 24 hours in advance of a planned shutdown of any control equipment or process equipment if the shutdown would cause any increase in the emissions of any regulated air pollutant. If the owner or operator does not have advance knowledge of the shutdown, notification shall be made to the Commissioner as soon as possible after the shutdown. However, notification is not required in the circumstances outlined in Items A, B and C of Minn. R. 7019.1000, subp. 3. At the time of notification, the owner or operator shall inform the Commissioner of the cause of the shutdown and the estimated duration. The owner or operator shall notify the Commissioner when the shutdown is over.	Minn. R. 7019.1000, subp. 3
Breakdown Notifications: Notify the Commissioner within 24 hours of a breakdown of more than one hour duration of any control equipment or process equipment if the breakdown causes any increase in the emissions of any regulated air pollutant. The 24-hour time period starts when the breakdown was discovered or reasonably should have been discovered by the owner or operator. However, notification is not required in the circumstances outlined in Items A, B and C of Minn. R. 7019.1000, subp. 2. At the time of notification or as soon as possible thereafter, the owner or operator shall inform the Commissioner of the cause of the breakdown and the estimated duration. The owner or operator shall notify the Commissioner when the breakdown is over.	Minn. R. 7019.1000, subp. 2
Notification of Deviations Endangering Human Health or the Environment: As soon as possible after discovery, notify the Commissioner or the state duty officer, either orally or by facsimile, of any deviation from permit conditions which could endanger human health or the environment.	Minn. R. 7019.1000, subp. 1
Notification of Deviations Endangering Human Health or the Environment Report: Within 2 working days of discovery, notify the Commissioner in writing of any deviation from permit conditions which could endanger human health or the environment. Include the following information in this written description: 1. the cause of the deviation; 2. the exact dates of the period of the deviation, if the deviation has been corrected; 3. whether or not the deviation has been corrected; 4. the anticipated time by which the deviation is expected to be corrected, if not yet corrected; and 5. steps taken or planned to reduce, eliminate, and prevent reoccurrence of the deviation.	Minn. R. 7019.1000, subp. 1

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/13/99

Facility Name: American Crystal Sugar - Moorhead

Permit Number: 02700001 - 004

<p>Air Pollution Control Equipment: Operate all pollution control equipment whenever the corresponding process equipment and emission units are operated, unless otherwise noted in Table A.</p>	<p>Title I Condition: 40 CFR Section 52.21(k); Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2; Minn. R. 7007.0800, subp. 16(J)</p>
<p>Fugitive Emissions: Do not cause or permit the handling, use, transporting, or storage of any material in a manner which may allow avoidable amounts of particulate matter to become airborne. Comply with all other requirements listed in Minn. R. 7011.0150.</p>	<p>Minn. R. 7011.0150</p>
<p>Fugitive Control Plan (continued): Examples of items to consider in the study include stockpile sizes, number of disturbances, VMT, number of trucks, water application intensity, etc. This plan should also include a schedule defining a frequency when the study will be redone so that the affect of any changing conditions at the facility on fugitive emissions can be examined.</p>	<p>Minn. Stat. Section 116.07, subp. 4a; Minn. R. 7007.0800, subp. 2</p>
<p>Application for Permit Amendment: If you need a permit amendment, submit application in accordance with the requirements of Minn. R. 7007.1150 through Minn. R. 7007.1500. Submittal dates vary, depending on the type of amendment needed.</p>	<p>Minn. R. 7007.1150 through Minn. R. 7007.1500</p>
<p>Extension Requests: The Permittee may apply for an Administrative Amendment to extend a deadline in a permit by no more than 120 days, provided the proposed deadline extension meets the requirements of Minn. R. 7007.1400, subp. 1(H)</p>	<p>Minn. R. 7007.1400, subp. 1(H)</p>
<p>Record keeping: Maintain records describing any insignificant modifications (as required by Minn. R. 7007. 1250, subp. 3) or changes contravening permit terms (as required by Minn. R. 7007.1350 subp. 2), including records of the emissions resulting from those changes.</p>	<p>Minn. R. 7007. 0800, subp. 5(B)</p>
<p>Record keeping: Retain all records at the stationary source for a period of five (5) years from the date of monitoring, sample, measurement, or report. Records which must be retained at this location include all calibration and maintenance records, all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by the permit. Records must conform to the requirements listed in Minn. R. 7007.0800, subp. 5(A).</p>	<p>Minn. R. 7007.0800, subp. 5(C)</p>
<p>Noise: The Permittee shall comply with the noise standards set forth in Minn. R. 7030.0010 to 7030.0080 at all times during the operation of any emission units. This is a state only requirement and is not federally enforceable.</p>	<p>Minn. R. 7030.0010 - 7030.0080</p>
<p>The Permittee shall comply with the General Conditions listed in Minn. R. 7007.0800, subp. 16</p>	<p>Minn. R. 7007.0800, subp. 16</p>
<p>Inspections: Upon presentation of credentials and other documents as may be required by law, allow the Agency, or its representative, to enter the Permittee's premises to have access to and copy any records required by this permit, to inspect at reasonable times (which include any time the source is operating) any facilities, equipment, practices or operations, and to sample or monitor any substances or parameters at any location.</p>	<p>Minn. R. 7007.0800, subp. 9(A)</p>
<p>Emission Fees: due 60 days after receipt of an MPCA bill.</p>	<p>Minn. R. 7002.0005 through Minn. R. 7002.0095</p>
<p>Parameters Used in Modeling: The stack heights, emission rates, and other parameters used in the modeling for this major PSD modification are listed in the Appendix of this permit. The Permittee must submit to the Commissioner for approval any revisions of these parameters and must wait for a written approval before making such changes. The information submitted must include, at a minimum, the locations, heights and diameters of the stacks, locations and dimensions of nearby buildings, the velocity and temperatures of the gases emitted, and the emission rates. The plume dispersion characteristics due to the revisions of the information must be equivalent to or better than the dispersion characteristics modeled in the application for this permit as approved in a memo from Margaret McCourtney to Trent Wickman, dated March 8, 1999. The Permittee shall demonstrate this equivalency in the proposal.</p>	<p>Title I Condition: 40 CFR Section 52.21(k); Minn. R. 7007.3000</p>
<p>If the information does not demonstrate equivalent or better dispersion characteristics, or if a conclusion cannot readily be made about the dispersion, the Permittee must remodel.</p> <p>For changes that do not involve an increase in an emission rate and that do not require a permit amendment, this proposal must be submitted as soon as practicable, but no less than 60 days before beginning actual construction of the stack or associated emission unit.</p> <p>For changes involving increases in emission rates and that require a minor permit amendment, the proposal must be submitted as soon as practicable, but no less than 60 days before beginning actual construction of the stack or associated emission unit.</p> <p>For changes involving increases in emission rates and that require a permit amendment other than a minor amendment, the proposal must be submitted with the permit applicaiton.</p>	<p>Title I Condition: 40 CFR Section 52.21(k); Minn. R. 7007.3000</p>

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/13/99

Facility Name: American Crystal Sugar - Moorhead

Permit Number: 02700001 - 004

Hydrogen Sulfide: less than or equal to 0.05 parts per million as a half hour average not to be exceeded more than twice per year in the ambient air around the facility	Minn. R. 7009.0080
Hydrogen Sulfide: less than or equal to 0.03 parts per million as a half hour average not to be exceeded more than twice in any five consecutive days in the ambient air around the facility	Minn. R. 7009.0080
Hydrogen Sulfide Ambient Monitoring: the Permittee shall establish a hydrogen sulfide monitoring network to measure the ambient concentration of hydrogen sulfide during the warm weather months (May through September). The network must be in place and operating by May 21, 1999. A Hydrogen Sulfide Monitoring Plan shall be submitted to the MPCA and approved before the network can be constructed. The Permittee shall operate the network in subsequent years. The Permittee may make a written request to the North District Manager to cease operation of the network at any time. An analysis of the ambient H ₂ S data collected to date shall accompany this request.	Minn. R. 7007.0800, subp. 4
Submit: due 365 days after Permit Issuance a recalculation of the hazard indices that were calculated in the Air Emission Risk Analysis for this permit (dated March 4, 1999) incorporating the first season of hydrogen sulfide monitoring data collected.	Minn. Stat. Section 116D.04
Risk Recalculation: for any change at the facility that would increase the hazard indices that were calculated in the Air Emission Risk Analysis for this permit (dated March 4, 1999) the Permittee shall recalculate the hazard indices and submit this recalculation to the North District Manager for review.	Minn. Stat. Section 116D.04

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/13/99

Facility Name: American Crystal Sugar - Moorhead

Permit Number: 02700001 - 004

Subject Item: GP 001 Boilers #1, #2, and #3**Associated Items:** EU 001 Boiler #1, North

EU 002 Boiler #2, Center

EU 003 Boiler #3, South

What to do	Why to do it
Fuel Limitation (Used Oil and Used Oil Sorbents): less than 1,250 gallons per month of on-site generated used oil/used oil sorbents based on a 12-month rolling average calculated by the 15th day of each month for the previous month.	Minn. R. 7007.0800, subp. 2
Fuel Limitation Recordkeeping: The Permittee shall maintain records of the amount of used oil and used oil sorbents combusted in the boilers every month and generate and maintain on-site a 12-month rolling sum of this usage.	Minn. R. 7007.0800, subp. 5

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/13/99

Facility Name: American Crystal Sugar - Moorhead

Permit Number: 02700001 - 004

Subject Item: GP 003 Sugar Silos

- Associated Items:** EU 016 Sugar Silo Dust Control System (8 identical)
 EU 017 Sugar Silo Dust Control System (8 identical)
 EU 018 Sugar Silo Dust Control System (8 identical)
 EU 019 Sugar Silo Dust Control System (8 identical)
 EU 020 Sugar Silo Dust Control System (8 identical)
 EU 021 Sugar Silo Dust Control System (8 identical)
 EU 022 Sugar Silo Dust Control System (8 identical)
 EU 023 Sugar Silo Dust Control System (8 identical)

What to do	Why to do it
Particulate Matter < 10 micron: less than or equal to 0.02 grains/dry standard cubic foot	Title I Condition: 40 CFR Section 52.21(k), Minn. R. 7007.3000
Total Particulate Matter: less than or equal to 0.02 grains/dry standard cubic foot	Title I Condition: 40 CFR Section 52.21(k), Minn. R. 7007.3000; also meets Minn. R. 7011.0715, subp. 1(A)
Only two silos may be operated at one time.	Title I Condition: 40 CFR Section 52.21(k), Minn. R. 7007.3000
Recordkeeping: once each day record the number of silos operating	Minn. R. 7007.0800, subp. 4; Minn. R. 7007.0800, subp. 4
Monitoring of Pollution Control Equipment: The Permittee shall monitor and record the presence or absence of visible emissions from each baghouse once each day while in operation. If visible emissions are observed, the Permittee shall take corrective action as soon as possible and make a record of the corrective action taken.	Minn. R. 7007.0800, subp. 14, Minn. R. 7007.0800, subp. 4, Minn. R. 7007.0800, subp. 5
Performance Test: due 365 days after Permit Issuance to measure particulate matter and particulate matter less than 10 microns from one representative sugar silo dust control system.	Minn. R. 7017.2020, subp. 1
Performance Test Pre-test Meeting: due 7 days before Performance Test	Minn. R. 7017.2030, subp. 4

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/13/99

Facility Name: American Crystal Sugar - Moorhead

Permit Number: 02700001 - 004

Subject Item: GP 005 Material Handling Performance Tests**Associated Items:** SV 014 Packaging Dust Control #1

SV 015 Packaging Dust Control #2

SV 029 Starch Bin Receiving

What to do	Why to do it
Performance Test: due 365 days after Permit Issuance to measure particulate matter and particulate matter less than 10 microns from EU 013 (SV 014), EU 014 (SV 015), and EU 028 (SV 029).	Minn. R. 7017.2020, subp. 1
Performance Test Pre-test Meeting: due 7 days before Performance Test	Minn. R. 7017.2030, subp. 4

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/13/99

Facility Name: American Crystal Sugar - Moorhead

Permit Number: 02700001 - 004

Subject Item: GP 006 Material Handling Source Requirements

- Associated Items:** SV 012 Pellet Convey System/Pulp Pellet Area Dust Control
 SV 013 Packaging Vacuum
 SV 014 Packaging Dust Control #1
 SV 015 Packaging Dust Control #2
 SV 016 Packaging Dust Control #3
 SV 025 Sugar Storage Conveyor
 SV 026 Weibull Bin Dust Control
 SV 029 Starch Bin Receiving
 SV 030 Sugar Reclaim (Azo) System
 SV 031 Bag Clipping Collection
 SV 032 Brown Sugar Batching Convey
 SV 033 Powdered Sugar Reclaim
 SV 034 Bag-in-Box Conveyor

What to do	Why to do it
Particulate Matter < 10 micron: less than or equal to 0.02 grains/dry standard cubic foot (this limit applies individually to each emission unit listed above under Associated Items).	Title I Condition: 40 CFR Section 52.21(k), Minn. R. 7007.3000
Total Particulate Matter: less than or equal to 0.02 grains/dry standard cubic foot (this limit applies individually to each emission unit listed above under Associated Items).	Title I Condition: 40 CFR Section 52.21(k), Minn. R. 7007.3000; also meets Minn. R. 7011.0715, subp. 1(A)
Opacity: less than or equal to 20 percent opacity (this limit applies individually to each emission unit listed above under Associated Items).	Minn. R. 7011.0715, subp. 1(B)
Monitoring of Pollution Control Equipment: The Permittee shall monitor and record the presence or absence of visible emissions from each baghouse once each day while in operation. If visible emissions are observed, the Permittee shall take corrective action as soon as possible and make a record of the corrective action taken.	Minn. R. 7007.0800, subp. 14, Minn. R. 7007.0800, subp. 4, Minn. R. 7007.0800, subp. 5

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/13/99

Facility Name: American Crystal Sugar - Moorhead

Permit Number: 02700001 - 004

Subject Item: EU 001 Boiler #1, North

Associated Items: CE 001 Electrostatic Precipitator - High Efficiency

GP 001 Boilers #1, #2, and #3

SV 001 Boiler #1

What to do	Why to do it
EMISSION AND OPERATIONAL LIMITS	hdr
Particulate Matter < 10 micron: less than or equal to 15.0 lbs/hour	Title I Condition: 40 CFR Section 52.21(k), Minn. R. 7007.3000
Total Particulate Matter: less than or equal to 15.0 lbs/hour	Title I Condition: 40 CFR Section 52.21(k), Minn. R. 7007.3000
Total Particulate Matter: less than or equal to 0.6 lbs/million Btu heat input	Minn. R. 7011.0510, subp. 1
Opacity: less than or equal to 20 percent opacity	Minn. R. 7011.0510, subp. 2
Sulfur Content of Fuel: less than or equal to 0.5 percent by weight (0.93 lb/MMBTU) for subbituminous coal as received.	Title I Condition: 40 CFR Section 52.21(k), Minn. R. 7007.3000
Sulfur Dioxide: less than or equal to 1.0 lbs/million Btu heat input	Minn. R. 7007.0800, subp. 2; meets the requirements of Minn. R. 7011.0510, subp. 1
Fuels Allowed: subbituminous coal, on-site generated used oil, and used oil sorbents.	Minn. R. 7007.0800, subp. 2
MONITORING, RECORDKEEPING AND TESTING	hdr
Boiler Pollution Control Equipment Requirement: The Permittee shall operate the electrostatic precipitator (CE001) on EU 001 with no less than the number of fields online as during the most recent performance test that has shown compliance with the total particulate matter standard in Minn. R. 7011.0510, subp. 1.	Minn. R. 7007.0800, subp. 14
Boiler Pollution Control Equipment Monitoring/Recordkeeping: The Permittee shall record the number of fields online in the electrostatic precipitator for EU 001, once each day while in operation. If the number of fields observed to be online is less than the number during the last performance test that demonstrated compliance, take corrective action and record the action taken.	Minn. R. 7007.0800, subp. 5
<p>Fuel Sulfur Content: Determine the sulfur content of each delivery of coal by either of the following methods:</p> <p>1) obtain from the fuel supplier for each shipment of fuel delivered, a signed certification of the sulfur content of the fuel, or</p> <p>2) according to ASTM sampling and analysis methods</p> <p>With either method, the weight represented by each sulfur content analysis shall be less than or equal to five train cars. Maintain these records for a minimum of five years from the date the information was obtained.</p>	Minn. R. 7007.0800, subp. 4; Minn. R. 7007.0800, subp. 5
<p>The Permittee shall measure the fuel sulfur content by either Method 1 or 2. All fuel sulfur content data shall be recorded at the time the data is received.</p> <p>Method 1. The Permittee shall obtain and maintain records of a fuel supplier certification containing at least one analysis for each 5 train-cars in each coal delivery certifying the sulfur content determined according to the current American Society of Testing and Materials (ASTM) test method.</p> <p>OR (continued on next requirement)</p>	Minn. R. 7007.0800, subp. 5
<p>Method 2. The Permittee may also analyze the fuel in the following manner:</p> <p>a) The Permittee shall sample the fuel fired in the boilers at least once each day. Record the date, time of fuel sampling, initials of person recording the information, and the results of the fuel analysis.</p> <p>b) The Permittee shall analyze the fuel sample to determine sulfur content of the fuel in percent by weight, in accordance with the current ASTM method.</p>	Minn. R. 7007.0800, subp. 5
Performance Test: due before end of each 60 months starting 01/04/1999 to measure particulate matter, particulate matter < 10 micron, opacity and sulfur dioxide emissions. Tests shall be conducted at intervals of 60 months between test dates.	Minn. R. 7017.2020, subp. 1
Performance Test Pre-test Meeting: due 7 days before end of each 60 months starting 01/04/1999 (at least 7 days before each test date).	Minn. R. 7017.2030, subp. 4

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/13/99

Facility Name: American Crystal Sugar - Moorhead

Permit Number: 02700001 - 004

Subject Item: EU 002 Boiler #2, Center

Associated Items: CE 002 Electrostatic Precipitator - High Efficiency

GP 001 Boilers #1, #2, and #3

SV 002 Boiler #2

What to do	Why to do it
EMISSION AND OPERATIONAL LIMITS	hdr
Particulate Matter < 10 micron: less than or equal to 15.0 lbs/hour	Title I Condition: 40 CFR Section 52.21(k), Minn. R. 7007.3000
Total Particulate Matter: less than or equal to 15.0 lbs/hour	Title I Condition: 40 CFR Section 52.21(k), Minn. R. 7007.3000
Total Particulate Matter: less than or equal to 0.6 lbs/million Btu heat input	Minn. R. 7011.0510, subp. 1
Opacity: less than or equal to 20 percent opacity	Minn. R. 7011.0510, subp. 2
Sulfur Content of Fuel: less than or equal to 0.5 percent by weight (0.93 lb/MMBTU) for subbituminous coal as received.	Title I Condition: 40 CFR Section 52.21(k), Minn. R. 7007.3000
Sulfur Dioxide: less than or equal to 1.0 lbs/million Btu heat input	Minn. R. 7007.0800, subp. 2; meets the requirements of Minn. R. 7011.0510, subp. 1
Fuels Allowed: subbituminous coal, on-site generated used oil, and used oil sorbents.	Minn. R. 7007.0800, subp. 2
MONITORING, RECORDKEEPING AND TESTING	hdr
Boiler Pollution Control Equipment Requirement: The Permittee shall operate the electrostatic precipitator (CE001) on EU 001 with no less than the number of fields online as during the most recent performance test that has shown compliance with the total particulate matter standard in Minn. R. 7011.0510, subp. 1.	Minn. R. 7007.0800, subp. 14
Boiler Pollution Control Equipment Monitoring/Recordkeeping: The Permittee shall record the number of fields online in the electrostatic precipitator for EU 001, once each day while in operation. If the number of fields observed to be online is less than the number during the last performance test that demonstrated compliance, take corrective action and record the action taken.	Minn. R. 7007.0800, subp. 5
<p>Fuel Sulfur Content: Determine the sulfur content of each delivery of coal by either of the following methods:</p> <p>1) obtain from the fuel supplier for each shipment of fuel delivered, a signed certification of the sulfur content of the fuel, or</p> <p>2) according to ASTM sampling and analysis methods</p> <p>With either method, the weight represented by each sulfur content analysis shall be less than or equal to five train cars. Maintain these records for a minimum of five years from the date the information was obtained.</p> <p>The Permittee shall measure the fuel sulfur content by either Method 1 or 2. All fuel sulfur content data shall be recorded at the time the data is received.</p> <p>Method 1. The Permittee shall obtain and maintain records of a fuel supplier certification containing at least one analysis for each 5 train-cars in each coal delivery certifying the sulfur content determined according to the current American Society of Testing and Materials (ASTM) test method.</p> <p>OR</p> <p>(continued on next requirement)</p>	Minn. R. 7007.0800, subp. 4; Minn. R. 7007.0800, subp. 5
<p>Method 2. The Permittee may also analyze the fuel in the following manner:</p> <p>a) The Permittee shall sample the fuel fired in the boilers at least once each day. Record the date, time of fuel sampling, initials of person recording the information, and the results of the fuel analysis.</p> <p>b) The Permittee shall analyze the fuel sample to determine sulfur content of the fuel in percent by weight, in accordance with the current ASTM method.</p>	Minn. R. 7007.0800, subp. 5
Performance Test: due before end of each 60 months starting 01/04/1999 to measure particulate matter, particulate matter, opacity and sulfur dioxide emissions. Tests shall be conducted at an interval of 60 months between test dates.	Minn. R. 7017.2020, subp. 1
Performance Test Pre-test Meeting: due 7 days before end of each 60 months starting 01/04/1999 (at least 7 days before each test date).	Minn. R. 7017.2030, subp. 4

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/13/99

Facility Name: American Crystal Sugar - Moorhead

Permit Number: 02700001 - 004

Subject Item: EU 003 Boiler #3, South

Associated Items: CE 003 Electrostatic Precipitator - High Efficiency

GP 001 Boilers #1, #2, and #3

SV 003 Boiler #3

What to do	Why to do it
EMISSION AND OPERATIONAL LIMITS	hdr
Particulate Matter < 10 micron: less than or equal to 15.0 lbs/hour	Title I Condition: 40 CFR Section 52.21(k), Minn. R. 7007.3000
Total Particulate Matter: less than or equal to 15.0 lbs/hour	Title I Condition: 40 CFR Section 52.21(k), Minn. R. 7007.3000
Total Particulate Matter: less than or equal to 0.6 lbs/million Btu heat input	Minn. R. 7011.0510, subp. 1
Opacity: less than or equal to 20 percent opacity	Minn. R. 7011.0510, subp. 2
Sulfur Content of Fuel: less than or equal to 0.5 percent by weight (0.93 lb/MMBTU) for subbituminous coal as received.	Title I Condition: 40 CFR Section 52.21(k), Minn. R. 7007.3000
Sulfur Dioxide: less than or equal to 1.0 lbs/million Btu heat input	Minn. R. 7007.0800, subp. 2; meets the requirements of Minn. R. 7011.0510, subp. 1
Fuels Allowed: subbituminous coal, on-site generated used oil, and used oil sorbents.	Minn. R. 7007.0800, subp. 2
MONITORING, RECORDKEEPING AND TESTING	hdr
Boiler Pollution Control Equipment Requirement: The Permittee shall operate the electrostatic precipitator (CE001) on EU 001 with no less than the number of fields online as during the most recent performance test that has shown compliance with the total particulate matter standard in Minn. R. 7011.0510, subp. 1.	Minn. R. 7007.0800, subp. 14
Boiler Pollution Control Equipment Monitoring/Recordkeeping: The Permittee shall record the number of fields online in the electrostatic precipitator for EU 001, once each day while in operation. If the number of fields observed to be online is less than the number during the last performance test that demonstrated compliance, take corrective action and record the action taken.	Minn. R. 7007.0800, subp. 5
<p>Fuel Sulfur Content: Determine the sulfur content of each delivery of coal by either of the following methods:</p> <p>1) obtain from the fuel supplier for each shipment of fuel delivered, a signed certification of the sulfur content of the fuel, or</p> <p>2) according to ASTM sampling and analysis methods</p> <p>With either method, the weight represented by each sulfur content analysis shall be less than or equal to five train cars. Maintain these records for a minimum of five years from the date the information was obtained.</p>	Minn. R. 7007.0800, subp. 4; Minn. R. 7007.0800, subp. 5
<p>The Permittee shall measure the fuel sulfur content by either Method 1 or 2. All fuel sulfur content data shall be recorded at the time the data is received.</p> <p>Method 1. The Permittee shall obtain and maintain records of a fuel supplier certification containing at least one analysis for each 5 train-cars in each coal delivery certifying the sulfur content determined according to the current American Society of Testing and Materials (ASTM) test method.</p> <p>OR (continued on next requirement)</p>	Minn. R. 7007.0800, subp. 5
<p>Method 2. The Permittee may also analyze the fuel in the following manner:</p> <p>a) The Permittee shall sample the fuel fired in the boilers at least once each day. Record the date, time of fuel sampling, initials of person recording the information, and the results of the fuel analysis.</p> <p>b) The Permittee shall analyze the fuel sample to determine sulfur content of the fuel in percent by weight, in accordance with the current ASTM method.</p>	Minn. R. 7007.0800, subp. 5
Performance Test: due before end of each year starting 01/04/1999 to measure particulate matter, particulate matter, opacity and sulfur dioxide emissions. Tests shall be conducted at an interval of 12 months between test dates.	Minn. R. 7017.2020, subp. 1
Performance Test Pre-test Meeting: due 7 days before end of each year starting 01/04/1999 (at least 7 days before each test date).	Minn. R. 7017.2030, subp. 4

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/13/99

Facility Name: American Crystal Sugar - Moorhead

Permit Number: 02700001 - 004

Subject Item: EU 004 Vertical Lime kiln

Associated Items: CE 004 Centrifugal Collector - High Efficiency

CE 005 Other

SV 004 Vertical Lime Kiln

SV 005 Carbonation Process Vent

What to do	Why to do it
EMISSION AND OPERATIONAL LIMITS	hdr
Particulate Matter < 10 micron: less than or equal to 5.0 lbs/hour during normal operation	Title I Condition: 40 CFR Section 52.21(k); Minn. R. 7007.3000
Total Particulate Matter: less than or equal to 5.0 lbs/hour during normal operation	Title I Condition: 40 CFR Section 52.21(k); Minn. R. 7007.3000
Particulate Matter < 10 micron: less than or equal to 15.0 lbs/hour during bypass	Title I Condition: 40 CFR Section 52.21(k); Minn. R. 7007.3000
Total Particulate Matter: less than or equal to 15.0 lbs/hour during bypass	Title I Condition: 40 CFR Section 52.21(k); Minn. R. 7007.3000
Sulfur Dioxide: less than or equal to 2.51 lbs/hour during normal operation	Title I Condition: 40 CFR Section 52.21(k); Minn. R. 7007.3000
Sulfur Dioxide: less than or equal to 45 lbs/hour during bypass	Title I Condition: 40 CFR Section 52.21(k); Minn. R. 7007.3000
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions to comply with the less stringent limit of either Minn. R. 7011.0730 or Minn. R. 7011.0735.	Minn. R. 7011.0610, subp. 1(A)(1)
Opacity: less than or equal to 20 percent opacity	Minn. R. 7011.0610, subp. 1(A)(2)
Sulfur Dioxide: less than or equal to 4.0 lbs/million Btu heat input	Minn. R. 7011.0610, subp. 2(B)
Sulfur Content of Fuel: less than or equal to 0.9 percent by weight for coke as received.	Title I Condition: 40 CFR Section 52.21(k); Minn. R. 7007.3000
Fuels Allowed: industrial oven coke as the main fuel source and propane and wood as fuels for initiating combustion of the coke.	Minn. R. 7007.0800, subp. 2
MONITORING, RECORDKEEPING AND TESTING	hdr
Pressure Drop: greater than or equal to 2 inches of water column and less than or equal to 6 inches of water column across the cyclones	Minn. R. 7007.0800, subp. 2, and Minn. R. 7007.0800, subp. 4
Monitoring of Pollution Control Equipment: The Permittee shall monitor and record the pressure drop across the dual cyclone system once each day while in operation.	Minn. R. 7007.0800, subp. 4; Minn. R. 7007.0800, subp. 5; and Minn. R. 7007.0800, subp. 14
<p>Fuel Sulfur Content: Determine the sulfur content of each delivery of coke by either of the following methods:</p> <p>1) obtain from the fuel supplier for each shipment of fuel delivered, a signed certification of the sulfur content of the fuel, or</p> <p>2) according to ASTM sampling and analysis methods</p> <p>With either method, the weight represented by each sulfur content analysis shall be less than or equal to one train car. Maintain these records for a minimum of five years from the date the information was obtained.</p>	Minn. R. 7007.0800, subp. 4; Minn. R. 7007.0800, subp. 5
<p>The Permittee shall measure the fuel sulfur content by either Method 1 or 2. All fuel sulfur content data shall be recorded at the time the data is received.</p> <p>Method 1. The Permittee shall obtain and maintain records of a fuel supplier certification for each coke delivery certifying the sulfur content determined according to the current American Society of Testing and Materials (ASTM) test method.</p> <p>OR (continued on next requirement)</p>	Minn. R. 7007.0800, subp. 5
<p>Method 2. The Permittee may also analyze the fuel in the following manner:</p> <p>a) The Permittee shall sample the fuel after each delivery. Sampling shall be conducted within 48 hours after each delivery. Samples shall be collected from a representative location. Record the date and time of delivery, time of fuel sampling, initials of person recording the information, and the results of the fuel analysis.</p> <p>b) The Permittee shall analyze the fuel sample to determine sulfur content of the fuel in percent by weight, in accordance with the current ASTM method.</p>	Minn. R. 7007.0800, subp. 5

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/13/99

Facility Name: American Crystal Sugar - Moorhead

Permit Number: 02700001 - 004

Performance Test: due 365 days after Permit Issuance to measure particulate matter, particulate matter < 10 micron, opacity and sulfur dioxide emissions. Two tests shall be conducted (1) during startup conditions with 100% bypass; and (2) under normal operating conditions.	Minn. R. 7017.2020, subp. 1
Performance Test Pre-test Meeting: due 7 days before Performance Test	Minn. R. 7017.2030, subp. 4

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/13/99

Facility Name: American Crystal Sugar - Moorhead

Permit Number: 02700001 - 004

Subject Item: EU 006 South Pulp Dryer

Associated Items: CE 007 Multiple Cyclone w/Fly Ash Reinjection-Common w/Coal Boilers

CE 008 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

SV 007 South Pulp Dryer

What to do	Why to do it
Particulate Matter < 10 micron: less than or equal to 20 lbs/hour	Title I Condition: 40 CFR Section 52.21(k), Minn. R. 7007.3000
Total Particulate Matter: less than or equal to 20 lbs/hour	Title I Condition: 40 CFR Section 52.21(k), Minn. R. 7007.3000
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions to comply with the less stringent limit of either Minn. R. 7011.0730 or Minn. R. 7011.0735.	Minn. R. 7011.0610, subp. 1(A)(1)
Opacity: less than or equal to 20 percent opacity	Minn. R. 7011.0610, subp. 1(A)(2)
Fuels Allowed: natural gas only.	Minn. R. 7007.0800, subp. 2
Pressure Drop: greater than or equal to 2 inches of water column and less than or equal to 8 inches of water column across the multiclone	Minn. R. 7007.0800, subp. 2, and Minn. R. 7007.0800, subp. 4
Pressure Drop: greater than or equal to 2 inches of water column and less than or equal to 6 inches of water column across the baghouse	Minn. R. 7007.0800, subp. 2, and Minn. R. 7007.0800, subp. 4
Monitoring of Pollution Control Equipment: The Permittee shall monitor and record the pressure drops across the multiclone and the fabric filter baghouse once each day while in operation. If any of the pressure drops are found to be outside the ranges in the permit, the Permittee shall take corrective action as soon as possible to restore the parameter within the proper range and make a record of the corrective action taken.	Minn. R. 7007.0800, subp. 14, Minn. R. 7007.0800, subp. 4, and Minn. R. 7007.0800, subp. 5
Performance Test: due before end of each 36 months starting 12/18/1996 to measure particulate matter and particulate matter < 10 micron emissions. The tests shall be conducted at an interval of 36 months between test dates.	Minn. R. 7017.2020, subp. 1
Performance Test Pre-test Meeting: due 7 days before end of each 36 months following Performance Test (7 days before each Performance Test)	Minn. R. 7017.2030, subp. 4

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/13/99

Facility Name: American Crystal Sugar - Moorhead

Permit Number: 02700001 - 004

Subject Item: EU 007 North Pulp Dryer

Associated Items: CE 009 Multiple Cyclone w/Fly Ash Reinjection-Common w/Coal Boilers

CE 010 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

SV 008 North Pulp Dryer

What to do	Why to do it
Particulate Matter < 10 micron: less than or equal to 20 lbs/hour	Title I Condition: 40 CFR Section 52.21(k), Minn. R. 7007.3000
Total Particulate Matter: less than or equal to 20 lbs/hour	Title I Condition: 40 CFR Section 52.21(k), Minn. R. 7007.3000
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions to comply with the less stringent limit of either Minn. R. 7011.0730 or Minn. R. 7011.0735.	Minn. R. 7011.0610, subp. 1(A)(1)
Opacity: less than or equal to 20 percent opacity	Minn. R. 7011.0610, subp. 1(A)(2)
Fuels Allowed: natural gas only.	Minn. R. 7007.0800, subp. 2
Pressure Drop: greater than or equal to 2 inches of water column and less than or equal to 8 inches of water column across the multiclone	Minn. R. 7007.0800, subp. 2, and Minn. R. 7007.0800, subp. 4
Pressure Drop: greater than or equal to 2 inches of water column and less than or equal to 6 inches of water column across the baghouse	Minn. R. 7007.0800, subp. 2, and Minn. R. 7007.0800, subp. 4
Monitoring of Pollution Control Equipment: The Permittee shall monitor and record the pressure drops across the multiclone and the fabric filter baghouse once each day while in operation. If any of the pressure drops are found to be outside the ranges in the permit, the Permittee shall take corrective action as soon as possible to restore the parameter within the proper range and make a record of the corrective action taken.	Minn. R. 7007.0800, subp. 14, Minn. R. 7007.0800, subp. 4, and Minn. R. 7007.0800, subp. 5
Performance Test: due before end of each 60 months starting 12/18/1996 to measure particulate matter and particulate matter < 10 micron emissions. The tests shall be conducted at an interval of 60 months between test dates.	Minn. R. 7017.2020, subp. 1
Performance Test Pre-test Meeting: due 7 days before end of each 60 months following Performance Test (7 days before each Performance Test)	Minn. R. 7017.2030, subp. 4

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/13/99

Facility Name: American Crystal Sugar - Moorhead

Permit Number: 02700001 - 004

Subject Item: EU 008 Pulp Pellet Cooler

Associated Items: CE 011 Centrifugal Collector - High Efficiency

SV 009 Pulp Pellet Cooler

What to do	Why to do it
Particulate Matter < 10 micron: less than or equal to 2.0 lbs/hour	Title I Condition: 40 CFR Section 52.21(k), Minn. R. 7007.3000
Total Particulate Matter: less than or equal to 2.0 lbs/hour	Title I Condition: 40 CFR Section 52.21(k), Minn. R. 7007.3000
Opacity: less than or equal to 20 percent opacity	Minn. R. 7011.0715, subp. 1(B)
Pressure Drop: greater than or equal to 1 inches of water column and less than or equal to 6 inches of water column across the cyclone	Minn. R. 7007.0800, subp. 2, and Minn. R. 7007.0800, subp. 4
Monitoring of Pollution Control Equipment: The Permittee shall monitor and record the pressure drops across the cyclone once each day while in operation. If the pressure drop is found to be outside the range in the permit, the Permittee shall take corrective action as soon as possible to restore the parameter within the proper range and make a record of the corrective action taken.	Minn. R. 7007.0800, subp. 14, Minn. R. 7007.0800, subp. 4, and Minn. R. 7007.0800, subp. 5
Performance Test: due before end of each 36 months starting 12/18/1996 to measure particulate matter and particulate matter < 10 micron emissions. The tests shall be conducted at an interval of 36 months between test dates.	Minn. R. 7017.2020, subp. 1
Performance Test Pre-test Meeting: due 7 days before end of each 36 months following Performance Test (7 days before each Performance Test)	Minn. R. 7017.2030, subp. 4

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/13/99

Facility Name: American Crystal Sugar - Moorhead

Permit Number: 02700001 - 004

Subject Item: EU 010 Sugar Dryer

Associated Items: CE 012 Dynamic Separator (Wet)

What to do	Why to do it
Particulate Matter < 10 micron: less than or equal to 1.0 lbs/hour	Title I Condition: 40 CFR Section 52.21(k), Minn. R. 7007.3000
Total Particulate Matter: less than or equal to 1.0 lbs/hour	Title I Condition: 40 CFR Section 52.21(k), Minn. R. 7007.3000
Opacity: less than or equal to 20 percent opacity	Minn. R. 7011.0715, subp. 1(B)
Pressure Drop: greater than or equal to 0.5 inches of water column and less than or equal to 8 inches of water column across the baghouse	Minn. R. 7007.0800, subp. 2, and Minn. R. 7007.0800, subp. 4
Monitoring of Pollution Control Equipment: The Permittee shall monitor and record the pressure drops across the baghouse once each day while in operation. If the pressure drop is found to be outside the range in the permit, the Permittee shall take corrective action as soon as possible to restore the parameter within the proper range and make a record of the corrective action taken.	Minn. R. 7007.0800, subp. 14, Minn. R. 7007.0800, subp. 4, and Minn. R. 7007.0800, subp. 5
Performance Test: due 365 days after Permit Issuance to measure particulate matter, particulate matter < 10 microns and opacity emissions.	Title I Condition: to remain a non-major modification under 40 CFR Section 52.21
Performance Test Pre-test Meeting: due 7 days before Performance Test	Minn. R. 7017.2030, subp. 4

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/13/99

Facility Name: American Crystal Sugar - Moorhead

Permit Number: 02700001 - 004

Subject Item: EU 011 Sugar Cooler

Associated Items: CE 013 Dynamic Separator (Wet)

What to do	Why to do it
Particulate Matter < 10 micron: less than or equal to 1.0 lbs/hour	Title I Condition: 40 CFR Section 52.21(k), Minn. R. 7007.3000
Total Particulate Matter: less than or equal to 3.0 lbs/hour	Minn. R. 7007.0800, subp. 2
Opacity: less than or equal to 20 percent opacity	Minn. R. 7011.0715, subp. 1(B)
Pressure Drop: greater than or equal to 0.5 inches of water column and less than or equal to 8 inches of water column across the baghouse	Minn. R. 7007.0800, subp. 2, and Minn. R. 7007.0800, subp. 4
Monitoring of Pollution Control Equipment: The Permittee shall monitor and record the pressure drops across the baghouse once each day while in operation. If the pressure drop is found to be outside the range in the permit, the Permittee shall take corrective action as soon as possible to restore the parameter within the proper range and make a record of the corrective action taken.	Minn. R. 7007.0800, subp. 14, Minn. R. 7007.0800, subp. 4, and Minn. R. 7007.0800, subp. 5
Performance Test: due 365 days after Permit Issuance to measure particulate matter, particulate matter < 10 microns and opacity emissions.	Title I Condition: to remain a non-major modification under 40 CFR Section 52.21
Performance Test Pre-test Meeting: due 7 days before Performance Test	Minn. R. 7017.2030, subp. 4

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/13/99

Facility Name: American Crystal Sugar - Moorhead

Permit Number: 02700001 - 004

Subject Item: EU 029 Emergency Electrical Generator Set**Associated Items:** SV 035 Emergency Electrical Generator

What to do	Why to do it
Fuels Allowed: distillate fuel oil only.	Title I Condition: 40 CFR Section 52.21(k), Minn. R. 7007.3000
Sulfur Dioxide: less than or equal to 0.5 lbs/million Btu heat input	Minn. R. 7011.2300, subp. 2
Opacity: less than or equal to 20 percent opacity once operating temperatures have been attained.	Minn. R. 7011.2300, subp. 1
Recordkeeping: retain on site for each shipment of fuel oil received that is subsequently combusted in the generator fuel supplier certification that indicates the grade of the fuel oil and the sulfur content.	Minn. R. 7007.0800, subp. 5

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/13/99

Facility Name: American Crystal Sugar - Moorhead

Permit Number: 02700001 - 004

Subject Item: EU 030 Ground Flare**Associated Items:** SV 036 Ground Flare

What to do	Why to do it
Opacity: less than or equal to 20 percent opacity	Minn. R. 7011.0110

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/13/99

Facility Name: American Crystal Sugar - Moorhead

Permit Number: 02700001 - 004

Subject Item: EU 031 Pulp Pellet Area Dust Control System

Associated Items: CE 031 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

GP 002 Insignificant Materials Handling Sources

SV 037 Pulp Pellet Loadout

What to do	Why to do it
Particulate Matter < 10 micron: less than or equal to 0.69 lbs/hour	Title I Condition: 40 CFR Section 52.21(k), Minn. R. 7007.3000
Total Particulate Matter: less than or equal to 0.69 lbs/hour	Title I Condition: 40 CFR Section 52.21(k), Minn. R. 7007.3000
Opacity: less than or equal to 20 percent opacity	Minn. R. 7011.0715, subp. 1(B)
Monitoring of Pollution Control Equipment: The Permittee shall monitor and record the presence or absence of visible emissions from each baghouse once each day while in operation. If visible emissions are observed, the Permittee shall take corrective action as soon as possible and make a record of the corrective action taken.	Minn. R. 7007.0800, subp. 14, Minn. R. 7007.0800, subp. 4, Minn. R. 7007.0800, subp. 5

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/13/99

Facility Name: American Crystal Sugar - Moorhead

Permit Number: 02700001 - 004

Subject Item: FS 002 Vehicle Traffic on Paved Roads

What to do	Why to do it
Silt Loading: less than or equal to 37.9 g/m ²	Title I Condition: 40 CFR Section 52.21(k), Minn. R. 7007.3000
Control Operations: greater than or equal to 7 per day during the time period of September 1 through October 31. Control operations include vacuum sweeping, water flushing, or broom sweeping and flushing.	Title I Condition: 40 CFR Section 52.21(k), Minn. R. 7007.3000
<p>Fugitive Emission Parameter Test: due 180 days after Permit Issuance to determine the average silt loading on the paved roads. □</p> <p>For this test, the performance test requirements at Minn. R. 7017.2000 to 7017.2060 do not apply except for the notification and submittal Requirements. The test plan shall conform to ASTM-C-136. Upon written notification from the MPCA that the Fugitive Emission Parameter Test demonstrates that the actual silt loading value exceeds the value used in the emission calculations for the modeling (i.e. the limit in this permit) the Permittee shall: recalculate the fugitive emission rate from paved roads, remodel for compliance with the NAAQS, MAAQS, and PSD increment, and submit a major amendment to change the necessary limits in this permit. No retest shall be required.</p>	Minn. R. 7007.0800, subp. 4
Recordkeeping: once per day during the period September 1 through October 31 record the total number of control operations	Minn. R. 7007.0800, subp. 4; Minn. R. 7007.0800, subp. 5; Minn. R. 7007.0800, subp. 14

TABLE A: LIMITS AND OTHER REQUIREMENTS

05/13/99

Facility Name: American Crystal Sugar - Moorhead

Permit Number: 02700001 - 004

Subject Item: FS 006 Vehicle Traffic on Unpaved Roads

What to do	Why to do it
Silt Content: less than or equal to 6.4 percent	Title I Condition: 40 CFR Section 52.21(k), Minn. R. 7007.3000
Watering Operations: greater than or equal to 1 per day during the time period of September 1 through October 31.	Title I Condition: 40 CFR Section 52.21(k), Minn. R. 7007.3000
<p>Fugitive Emission Parameter Test: due 180 days after Permit Issuance to determine the average silt content of the unpaved roads. □</p> <p>For this test, the performance test requirements at Minn. R. 7017.2000 to 7017.2060 do not apply except for the notification and submittal Requirements. The test plan shall conform to ASTM-C-136. Upon written notification from the MPCA that the Fugitive Emission Parameter Test demonstrates that the actual silt content value exceeds the value used in the emission calculations for the modeling (i.e. the limit in this permit) the Permittee shall: recalculate the fugitive emission rate from unpaved roads, remodel for compliance with the NAAQS, MAAQS, and PSD increment, and submit a major amendment to change the necessary limits in this permit. No retest shall be required.</p>	Minn. R. 7007.0800, subp. 4
Recordkeeping: once per day during the period September 1 through October 31 record the total number of watering operations	Minn. R. 7007.0800, subp. 4; Minn. R. 7007.0800, subp. 5; Minn. R. 7007.0800, subp. 14

TABLE B: SUBMITTALS

05/13/99

Facility Name: American Crystal Sugar - Moorhead
Permit Number: 02700001 - 004

Table B lists most of the submittals required by this permit. Please note that some submittal requirements may appear in Table A or, if applicable, within a compliance schedule located in Table C. Table B is divided into two sections in order to separately list one-time only and recurrent submittal requirements.

Each submittal must be postmarked or received by the date specified in the applicable Table. Those submittals required by parts 7007.0100 to 7007.1850 must be certified by a responsible official, defined in Minn. R. 7007.0100, subp. 21. Other submittals shall be certified as appropriate if certification is required by an applicable rule or permit condition.

Send any application for a permit or permit amendment to:

Permit Technical Advisor
Permit Section
Air Quality Division
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, Minnesota 55155-4194

Also, where required by an applicable rule or permit condition, send to the Permit Technical Advisor notices of:

- accumulated insignificant activities,
- installation of control equipment,
- replacement of an emissions unit, and
- changes that contravene a permit term.

Unless another person is identified in the applicable Table, send all other submittals to:

Supervisor
Compliance Determination Unit
Air Quality Division
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, Minnesota 55155-4194

Send submittals that are required to be submitted to the U.S. EPA regional office to:

Mr. George Czerniak
Air and Radiation Branch
EPA Region V
77 West Jackson Boulevard
Chicago, Illinois 60604

Send submittals that are required by the Acid Rain Program to:

U.S. Environmental Protection Agency
Clean Air Markets Division
1200 Pennsylvania Avenue NW (6204N)
Washington, D.C. 20460

TABLE B: ONE TIME SUBMITTALS OR NOTIFICATIONS

05/13/99

Facility Name: American Crystal Sugar - Moorhead

Permit Number: 02700001 - 004

What to send	When to send	Portion of Facility Affected
Application for Permit Reissuance	due 180 days before expiration of Existing Permit	Total Facility
Fugitive Control Plan	due 60 days after Permit Issuance for review and approval by the Commissioner, revise the fugitive control plan to include a schedule to complete a study that demonstrates how the actual conditions at the facility compare to the assumptions made in calculating emissions for the modeling done in support of this permit.	Total Facility
Operation and Maintenance Plan	due 60 days after Permit Issuance revise the existing plan to include information pertaining to the new pollution control equipment that is added with this modification. The plan shall also include the corrective actions to be taken should any of the monitored parameters on the pollution control equipment fall outside their normal operating ranges.	Total Facility
Performance Test Notification (written)	due 30 days before Performance Test	EU004, EU010, EU011, GP003, GP005
Performance Test Plan	due 30 days before Performance Test	EU004, EU010, EU011, GP003, GP005
Performance Test Report - Microfiche Copy	due 105 days after Performance Test	EU004, EU010, EU011, GP003, GP005
Performance Test Report	due 45 days after Performance Test	EU004, EU010, EU011, GP003, GP005
Testing Frequency Plan	due 60 days after Performance Test. The plan shall specify a testing frequency for each unit using the test data and MPCA guidance. Future performance tests based on year (12 month), 36 month, and 60 month intervals, or as applicable, shall be required on written approval of MPCA per Minn. R. 7017.2020, subp. 1.	GP005
Testing Frequency Plan	due 60 days after Performance Test. The plan shall specify a testing frequency using the test data and MPCA guidance. Future performance tests based on year (12 month), 36 month, and 60 month intervals, or as applicable, shall be required on written approval of MPCA per Minn. R. 7017.2020, subp. 1.	EU010, EU011
Testing Frequency Plan	due 60 days after Performance Test. The plan shall specify a testing frequency using the test data and MPCA guidance. Future performance tests based on year (12 month), 36 month, and 60 month intervals, or as applicable, shall be required on written approval of MPCA per Minn. R. 7017.2020, subp. 1.	EU004, GP003

TABLE B: RECURRENT SUBMITTALS

05/13/99

Facility Name: American Crystal Sugar - Moorhead

Permit Number: 02700001 - 004

What to send	When to send	Portion of Facility Affected
Semiannual Deviations Report	due 30 days after end of each calendar half-year following Permit Issuance . The first report of each calendar year covers January 1 - June 30. The second report of each calendar year covers July 1 - December 31.	Total Facility
Compliance Certification	due 30 days after end of each calendar year following Permit Issuance . The report covers all deviations experienced during the calendar year.	Total Facility
Emissions Inventory Report	due 91 days after end of each calendar year following Permit Issuance (April 1). To be submitted on a form approved by the Commissioner.	Total Facility
Performance Test Notification (written)	due 30 days before end of each year starting 01/04/1999 (at least 30 days before each test date).	EU003
Performance Test Plan	due 30 days before end of each year starting 01/04/1999 (at least 30 days before each test date).	EU003
Performance Test Report - Microfiche Copy	due 105 days after end of each year starting 01/04/1999 (no more than 105 days after each test date).	EU003
Performance Test Report	due 45 days after end of each year starting 01/04/1999 (no more than 45 days after each test date).	EU003
Performance Test Notification (written)	due 30 days before end of each 36 months following Performance Test (30 days before each Performance Test)	EU006, EU008
Performance Test Plan	due 30 days before end of each 36 months following Performance Test (30 days before each Performance Test)	EU006, EU008
Performance Test Report - Microfiche Copy	due 105 days after end of each 36 months following Performance Test (105 days after each Performance Test)	EU006, EU008
Performance Test Report	due 45 days after end of each 36 months following Performance Test (45 days after each Performance Test)	EU006, EU008
Performance Test Notification (written)	due 30 days before end of each 60 months following Performance Test (30 days before each Performance Test)	EU007
Performance Test Notification (written)	due 30 days before end of each 60 months starting 01/04/1999 (at least 30 days before each test date).	EU001, EU002
Performance Test Plan	due 30 days before end of each 60 months following Performance Test (30 days before each Performance Test)	EU007
Performance Test Plan	due 30 days before end of each 60 months starting 01/04/1999 (at least 30 days before each test date).	EU001
Performance Test Plan	due 30 days before end of each 60 months starting 01/04/1999 (at least 30 days before each test date).	EU002
Performance Test Report - Microfiche Copy	due 105 days after end of each 60 months following Performance Test (105 days after each Performance Test)	EU007
Performance Test Report - Microfiche Copy	due 105 days after end of each 60 months starting 01/04/1999 (no more than 105 days after each test date).	EU001
Performance Test Report - Microfiche Copy	due 105 days after end of each 60 months starting 01/04/1999 (no more than 105 days after each test date).	EU002
Performance Test Report	due 45 days after end of each 60 months following Performance Test (45 days after each Performance Test)	EU007

TABLE B: RECURRENT SUBMITTALS

05/13/99

Facility Name: American Crystal Sugar - Moorhead

Permit Number: 02700001 - 004

Performance Test Report	due 45 days after end of each 60 months starting 01/04/1999 (no more than 45 days after each test date).	EU001
Performance Test Report	due 45 days after end of each 60 months starting 01/04/1999 (no more than 45 days after each test date).	EU002

APPENDIX MATERIAL

Facility Name: American Crystal Sugar - Moorhead

Permit Number: 02700001-004

TABLE 1 - Modeled Emission Rates (lb/hr)

Stack #	PM10	SO2	NOx	CO
001	15.0	126.9	99.4	159.9
002	15.0	126.9	99.4	159.9
003	15.0	155.6	121.8	192.6
004*	5.0, 15.0	2.51, 45	0.979	0.701
005	0.33	2.37	19.6	14.0
006	0.20	-	-	-
007	20.0	0.043	10.1	2.53
008	20.0	0.043	10.1	2.53
009	2.00	-	-	-
010	1.0	-	-	-
011	1.0	-	-	-
012	0.23	-	-	-
013	0.15	-	-	-
014	1.71	-	-	-
015	0.38	-	-	-
016	0.38	-	-	-
017	0.86	-	-	-

018	0.86	-	-	-
019	0.86	-	-	-
020	0.86	-	-	-
021	0.86	-	-	-
022	0.86	-	-	-
023	0.86	-	-	-
024	0.86	-	-	-
025	0.82	-	-	-
026	0.26	-	-	-
027	2.03	-	-	-
028	2.03	-	-	-
029	0.21	-	-	-
030	0.05	-	-	-
031	0.55	-	-	-
032	0.05	-	-	-
033	0.02	-	-	-
034	0.05	-	-	-
035	0.71	0.660	10.0	2.16
036	1.06	0.046	10.8	2.70
037	0.69	-	-	-
paved traffic**	6.62, 8.18, 5.58	-	-	-

unpaved traffic**	2.02, 0.09, 3.16	-	-	-
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*values represent: long term average, short term average

** values represent: long term average, short term average during the beet haul period (September 1 through October 31), short term average during the non-beet haul period

TABLE 2 - Modeled Stack Parameters

Stack #	Height (ft)	Diameter (ft)	Flow Rate (acfm)	Temperature (°F)	Orientation
001	150.0	5.0	91,700	410	Vertical
002	150.0	5.0	91,700	410	Vertical
003	150.0	5.0	95,300	410	Vertical
004	102.0	1.0	400 {8,000}	163	Vertical
005	75.0	2.5	7,600 {0}	70	Vertical
006	90.0	5.0	10,000	120	Vertical
007	142.5	5.0	95,000	120	Vertical
008	142.5	4.0	95,000	120	Vertical
009	57.5	3.2	24,430	105	Vertical
010	99.3	2.25	21,000	130	Vertical
011	100.3	2.5	21,000	130	Vertical
012	34.5	0.58	1,340	70	Vertical
013	43.0	0.58	860	70	Vertical
014	49.0	2.08	10,000	70	Vertical

015	43.0	1.58	2,200	70	Vertical
016	43.0	0.92	2,200	70	Vertical
017	109.0	2.18	5,000	70	Horizontal
018	109.0	2.18	5,000	70	Horizontal
019	109.0	2.18	5,000	70	Vertical
020	109.0	2.18	5,000	70	Vertical
021	109.0	2.18	5,000	70	Vertical
022	109.0	2.18	5,000	70	Vertical
023	109.0	2.18	5,000	70	Vertical
024	109.0	2.18	5,000	70	Vertical
025	90.0	1.0	4,800	70	Vertical
026	104.0	0.5	1,500	70	Vertical
027	40.0	1.0	3,000	212	Vertical
028	40.0	1.0	3,000	212	Vertical
029	42.0	3.0	1,200	70	Vertical
030	43.0	0.5	310	70	Vertical
031	43.0	0.5	3200	70	Vertical
032	43.0	0.5	300	70	Vertical
033	43.0	0.5	130	70	Vertical
034	43.0	0.5	300	70	Vertical
035	15.0	0.67	8,000	800	Vertical

036	21.0	1.0	15,000	1,000	Vertical
037	24.0	2.0	8,000	70	Horizontal

TECHNICAL SUPPORT DOCUMENT
For
AIR EMISSION PERMIT NO. 02700001-015

This Technical Support Document (TSD) is for all the interested parties of the permit. The purpose of this document is to set forth the legal and factual basis for the permit conditions, including references to the applicable statutory or regulatory provisions.

1. General Information

1.1. Applicant and Stationary Source Location:

Owner and Operator Address and Phone Number	Facility Address (SIC Code: 2063)
American Crystal Sugar Company 101 North Third Street Moorhead, Minnesota 56560 Contact: Mr. Joel C. Smith, Regulatory Affairs Manager (218)236-4347	American Crystal Sugar Company 2500 North 11th Street Moorhead, Minnesota 56560 Contact: Mr. Joel C. Smith, Regulatory Affairs Manager (218)236-4347

1.2. Description of the Facility

American Crystal Sugar Company (Company) owns and operates a sugar beet processing plant at 2500 North 11th Street, Moorhead, Clay County, Minnesota. In addition to this stationary source, the Company owns processing plants in both East Grand Forks and Crookston, Minnesota and also has a research center in Moorhead. The Moorhead plant consists of three coal-fired (subbituminous) boilers which produce process steam; two natural gas-fired pulp dryers; one pulp pellet cooler; pulp pellet handling, storage and loading equipment; one lime kiln (calciner); one lime slaker; one sugar dryer; one sugar cooler; ash removal systems and dry sugar storage, handling, and sacking equipment.

Particulate Matter (PM) emissions from the three boilers are controlled by electrostatic precipitators (ESP). Other pollution control equipment consists of a multiclone with a hopper-aspiration fabric filter system for each pulp dryer, a cyclone for the pellet cooler, a fabric filters for sugar storage and conveying, a cyclone for the lime kiln, and fabric filters for the sugar dryer and sugar cooler. Coal, coke and limerock are received by rail and stored in uncovered storage piles.

The Moorhead plant employs about 250 people and it operates from late August through May of each year, 24 hours per day. The plant will typically startup two to three days before starting to slice sugar beets and shutdown two to four days after beet slicing has stopped.

1.3 Description of Recent Permit Actions at This Facility

Permit Number and Issuance Date	Action Authorized
29A-84-I/O-8 1984	Installation and operation of the pulp pellet cooler.
29A-84-O-1 1984	Amd. No. 1 to previous permit to modify coal testing program and coal burning limit.
29A-88-O-7 1988	Installation of rotoclones on sugar granulator and sugar cooler.
29A-88-I/O-9 1988	Installation of fiber plant (now defunct).
29A-91-OT-1 1991	Draft total facility permit for entire plant. Was never issued.
29C-93-P-1 6/1/93	Installation of fuel storage tanks.
02700001-011 8/15/95	Pulp dryer fuel change from coal to natural gas.
02700001-012 10/30/95	Increased previously permitted hours of operation limits (to 6000 hours per year) and decreased previously permitted particulate emission limits on the sugar dryer, sugar cooler and pellet cooler to maintain integrity of previous permitting status. These units were installed in 1983 and 1984.
02700001-001 3/10/98	Title V permit.
02700001-013 fall 1998 never issued	Application to relax permitted hours of operation limits on the sugar dryer, sugar cooler and pellet cooler to 6200 hours per year in exchange for stricter emission limits and installing pollution control equipment. Permit drafted and put on public notice but was pulled by the Company.
02700001-014 9/27/98	Permit to extend the testing deadlines from the Title V permit 120 days for boilers #1-#3, pellet cooler, sugar dryer, and sugar cooler.

1.4 Description of the Activities Allowed By This Permit Action

The Minnesota Pollution Control Agency (MPCA) issued the Title V permit for the Company's Moorhead facility on March 10, 1998. The MPCA received an application for a major amendment for the Company's Moorhead facility on February 9, 1999. This permit amendment is for the elimination of operating hour restrictions on the sugar dryer, sugar cooler and pellet cooler. No new construction is requested nor granted with this permit.

An Environmental Assessment Worksheet (EAW) was required as a part of this permit application because the project is projected to result in a greater than 100 ton per year increase air emissions. An air emissions risk analysis (AERA) was conducted as a part of the EAW process to evaluate potential human and environmental health risks from the modified facility. The AERA focused on airborne pollutants from the facility other than the criteria pollutants. A copy of the EAW or AERA can be obtained by contacting Craig Affeldt at the St. Paul office of the MPCA.

Two comment letters were received during the comment period from citizens and one from the city of Dilworth which related to odor concerns from the plant. In addition, as of May 12, 1999, approximately six additional people expressed their concerns relating to odor. These six comments were received outside the comment period. Several articles relating to this permit were run in the Fargo Forum. Representative Kevin Goodno also called to get more information about the permit because a number of his constituents had contacted him. A response letter was sent to these people and it is attached to this document.

1.5. Facility Emissions:

Table 1. Emissions Associated With the Modification

Pollutant	Potential to Emit from the modification (lb/hr)	Potential to Emit from the modification (TPY)	Emission Increases Authorized with this Permit Action	Emission Decreases Authorized with this Permit Action	Other contemporaneous emission increases/decreases (TPY)	Net Emission Change (TPY)	NSR/112(g) Threshold Level (TPY)	NSR/MACT Review Required (Yes or No)
PM		428.3			182.7	245.6	25	Yes
PM ₁₀		427.5			182.1	245.4	15	Yes
SO ₂		1815.3			673.5	1141.8	40	Yes
NO _x		1578.3			832.4	745.9	40	Yes
VOC		NA			NA	NA	40	Yes
CO		596.1			323.4	272.7	100	Yes
Lead		0.98			0.55	0.43	0.6	No

Table 2. Facility and Permit Classification

Classification	Major/Affected Source	*Synthetic Minor	*Minor
PSD (list pollutant)	PM, PM ₁₀ , SO ₂ , NO _x , & CO		
NAAR (list pollutant) Not Applicable			
Part 70 Permit Program (list pollutant)	PM, PM ₁₀ , SO ₂ , NO _x , & CO		

* Refers to potential emissions that are less than those specified as major by 40 CFR § 52.21, 40 CFR pt. 51, Appendix S, and 40 CFR pt. 70.

2. Regulatory and/or Statutory Basis

Summary Regulatory and/or Statutory Basis of the Emission or Operational Limit

Regulatory Overview of Facility

EU No.	Applicable Regulations	Comments:
Total Facility	Title I Conditions (40 CFR § 52.21)	Emission and operational limits that reflect assumptions made in the modeling exercise that showed compliance with the ambient standards and PSD increments

3. Technical Information

Summary of Federal Regulation Applicability

Prevention of Significant Deterioration (PSD), 40 CFR § 52.21 - The source is an existing major source under PSD. PSD review is applicable to the modification because the net emission increase for the modification is significant for all criteria pollutants. PSD review consists of the following elements:

Best Available Control Technology (BACT) Review

This review was not triggered because there was no physical change or change in the method of operation due to this permit action. There is no new construction authorized with this permit, only the removal of hours of operation limits and modification of some emission limits.

Ambient Air Quality Analysis

This analysis takes the emission rates from the facility and uses computer models to predict ambient concentrations of the pollutants of interest. The results are then compared to the National Ambient Air Quality Standards (NAAQS), Minnesota Ambient Air Quality Standards (MAAQS), and PSD allowable increment. This analysis was completed and the results are summarized in a letter from Margaret McCourtney to Trent Wickman, dated March 8, 1999 (Attachment 2). The letter shows that the facility is in compliance with the standards although the PM₁₀ results were only 5 percent below the standard. The application for this permit holds more details on the analysis.

Class I Area Impact Analysis

The facility is located roughly 170 miles (270 kilometers, km) west of the nearest Class I area (Voyagers National Park). The Company completed a Level-1 analysis using the EPA-approved plume visual impact screening model (VISCREEN Version 1.01). This is contained in Appendix D of the application. Visibility was analyzed for each of the four seasons, with differing background visual ranges for the Class I area in each season. Upon completion of the Level I VIA, VISCREEN indicated no probable impairment during any representative season. Therefore, the Class I area visibility requirements will not be violated due to the proposed modification.

In addition, although no PSD Class I increment analysis was done, page B-1 of Appendix B in the Crookston application shows the maximum distance of significant impacts: 13.3 km for PM₁₀, 29.4 km for SO₂, and 12.7 km for NO_x. This implies insignificant impacts beyond these respective distances including the PSD Class I areas much further away. The Crookston and Moorhead facilities are virtually identical.

Additional Impacts Analysis

This analysis involved a Growth Analysis and a Soil and Vegetation Impact Analysis. No adverse affects with respect to industrial/economic growth or soils and vegetation are expected from the proposed modification. Information concerning this analysis can be found in Attachment 3.

Standards of Performance for New Stationary Sources (NSPS), 40 CFR pt. 60 - A review of the unit operations of the plant indicates the facility is exempt from 40 CFR pt. 60, NSPS requirements. The three main boilers, with rated inputs of 137 MMBtu/hour to 165 MMBtu/hour, are not subject to 40 CFR pt. 60, subp. Db, because they were constructed before June 19, 1984. Additionally, the lime kiln is not subject to 40 CFR pt. 60, subp. HH, because (1) it is not a rotary lime kiln, and (2) it was constructed before May 3, 1977.

National Emission Standards for Hazardous Air Pollutants (NESHAP), 40 CFR pt. 61 and 63 - There are no Part 61 NESHAP applicable to this facility. The facility is a major source of HAP based on the emissions of one HAP (hydrogen flouride) being greater than the 10 ton per year threshold. The total of all HAP at the facility is below the 25 ton per year threshold. There are currently no promulgated Part 63 NESHAP applicable to the facility as a whole. The existing boilers will likely be subject to the Part 63 NESHAP for Industrial Combustion due to be proposed in November of 1999.

The modification is not subject to 40 CFR pt. 63, subp. B (i.e. Section 112(g)(2)(B) of Title III of the Clean Air Act), because it does not meet the definition of “construct a major source” or “reconstruct a major source” at 40 CFR § 63.41. There are no construction activities taking place as a part of this modification.

Hydrogen Sulfide (H₂S) - The State of Minnesota has a state ambient air quality standard for H₂S at Minn. R. 7009.0080. At this facility the main source of H₂S is from anaerobic decomposition of wastewater in the wastewater treatment ponds. It is very difficult to calculate potential emissions of H₂S from these ponds because of broad assumptions that have to be made concerning water quality and ambient conditions. Because of the high degree of uncertainty in the calculation process, ambient monitoring is the only accurate way that a comparison can be made to the standard. Relatively little ambient monitoring has taken place at the sugar beet facilities in Minnesota. Comparisons to facilities where monitoring has been done is problematic due to differences in the sizes of the facilities, sizes of the wastewater ponds, and control practices employed. Due to the absence of ambient monitoring data at this facility, a monitoring network will be set up to gather ambient H₂S data during the warm months of the year. During this time the effectiveness of straw covers and other control techniques can be explored. The wastewater treatment system may be re-examined based on the results of the H₂S monitoring.

3. Technical Information

Boilers (EU 001, EU 002, and EU 003)

The PM and PM₁₀ emission limits were self imposed by the Company to meet the ambient standards (as demonstrated in the Ambient Air Quality Analysis). Other emission limits are based on AP-42 emission factors.

The Company has proposed a coal sulfur content limit not to exceed 0.5 percent by weight. The 0.5 percent sulfur content limit is to protect the 1-hour state and 3-hour federal Sulfur Dioxide (SO₂) ambient standard. All fuel shipments received must be less than 0.5 percent sulfur and the sampling will be based on sampling and analyzing a daily equivalent amount of coal. In addition a study is required in the permit for Crookston to determine how much variability is introduced by using a sample size that corresponds to a time period longer than the short time periods of the standard. This study will be conducted at the mine where the analysis is normally done.

In issuing this permit, available data was used to determine how much the short term SO₂ emissions may be underestimated by using the equation in AP-42 which is based on coal sulfur content analysis that is collected on an averaging time that is greater than the averaging time of the standard. The MPCA was provided with seven months of paired SO₂ continuous emission monitoring (CEM) data and sulfur content data from the East Grand Forks facility. All the three of the Company's sugar production facilities burn similar coal. The coal analysis was provided to the Company on a shipment average basis from their supplier. The data showed that shipment sizes varied from a couple days supply of coal to over a weeks supply. In general, the AP-42 prediction was higher than the CEM data. An exception to this trend occurred during times of high SO₂ values. During some of these days the CEM data was higher than the emissions predicted by AP-42, possibly indicating an "averaging affect" where small pockets of high sulfur coal were not reflected in the shipment average sulfur content values received by the company. The worst case deviation between the hourly CEM data and the AP-42 predicted emission rate was approximately 32 percent.

The short term ambient SO₂ modeling showed that the facility is approximately 35 percent below the standard. As stated above, coal sulfur analysis will now be done on a five train car (about one days supply of coal for all the boilers) average basis versus a shipment average basis as was the case previously. Based on the available cushion below the ambient standard, and the fact that the short term deviation from the reported average sulfur content should now be reduced by changing from a shipment average to a five train car average basis, there is reasonable assurance that the short term SO₂ ambient standards will be protected. If the results of the sulfur variability study show that the variability is a higher number than was estimated, the permit limits for coal sulfur content will be lowered.

The boilers were recently tested. The next performance testing for PM, PM₁₀, SO₂ and opacity is required in about four years.

For the ESPs the only requirement for periodic monitoring is to record the number of ESP fields on-line. Recording this parameter and not voltage, amperage, and spark rate was based upon the Control Equipment Requirements Work group findings that this is the primary, relevant parameter for ESPs.

Lime Kiln (EU 004)

The PM and PM₁₀ emission limits were self imposed by the Company to meet the ambient standards (as demonstrated in the Ambient Air Quality Analysis). SO₂ emissions were based on a mass balance approach and the permitted coke sulfur content of 0.9 percent. Other emission limits are based on AP-42 emission factors.

During normal operation it is assumed that approximately ninety five percent of the flue gas from the lime kiln is routed through the carbonators which effectively works as a wet scrubber to remove particulates and SO₂. The remaining flue gas is routed through a bypass stack which is controlled by a cyclone. During startup, 100 percent of the flue gas is routed out the bypass stack. Startup would be the worst case scenario for air emissions. Different emission calculations were performed for the startup scenario and these emission estimates were used in the "short term" modeling. The short term emissions of SO₂ were based on a mass balance approach and the permitted sulfur content limit of 0.9 percent by weight. The short term emissions of PM and PM₁₀ were calculated using best engineering judgement. The short term PM and PM₁₀ emission limit is larger than the long term limit at the bypass stack for this unit.

Performance testing for PM, PM₁₀, SO₂ and opacity is required within 365 days from permit issuance. Testing for particulates and SO₂ will be done at both bypass and normal conditions. Supplier certification is required for each shipment of coke to show the sulfur content. All fuel shipments received must be less than 0.9 percent sulfur and no averaging between different shipments is allowed. Coke sulfur analysis must be done on a one train car average basis. This is approximately a two days supply of coke. The Company will monitor and record the pressure drop across the cyclone once each day while in operation to fulfill periodic monitoring requirements.

Sugar Dryer and Sugar Cooler (EU 010 and EU 011)

The company recently replaced the rotoclones with baghouses. Because of the new pollution control equipment the PM and PM₁₀ emission limits were reduced to the levels below those previously permitted. All previous operational limits on hours of operation are removed.

These units were recently tested. Performance testing for PM and PM₁₀ and opacity is required within 365 days from permit issuance.

The modeling assumes proper operation of the baghouses. The Company will monitor and record the pressure drop across the baghouse once each day while in operation to fulfill periodic monitoring requirements. Pressure drop monitoring was used here due to the fact that the temperature of the exhaust may at times preclude visible emission monitoring due to a condensing plume. The identification of pressure drop readings outside their normal operating ranges will require the Company to take corrective actions.

Pulp Dryers (EU 006 and EU 007)

The pulp dryer originally burned coal and was later converted to burning natural gas only. The PM and PM₁₀ emission limits were self imposed by the Company to meet the ambient standards (as demonstrated in the Ambient Air Quality Analysis). Other emission limits are based on AP-42 emission factors.

The modeling also assumes that the multiclones with hopper aspiration systems controlling these units are operating properly. The Company will monitor and record the pressure drop across the multiclone and the fabric filter baghouse once each day while in operation to fulfill periodic monitoring requirements. The identification of pressure drop readings outside their normal operating ranges will require the Company to take corrective actions.

Based on previous performance testing, additional testing for PM and PM₁₀ is due before December 18, 1999.

Pulp Pellet Cooler (EU 008)

The PM and PM₁₀ emission limits were retained at the levels in previous permits. All previous operational limits on hours of operation are removed.

The modeling also assumes that the cyclone is operating properly. The Company will monitor and record the pressure drop across the multiclone once each day while in operation to fulfill periodic monitoring requirements. Pressure drop monitoring was used here due to the fact that the temperature of the exhaust may at times preclude visible emission monitoring due to a condensing plume. The identification of pressure drop readings outside their normal operating ranges will require the Company to take corrective actions.

Based on previous performance testing, additional testing for PM and PM₁₀ is due before December 18, 1999.

Sugar Silos (EU 016 through EU 023)

An assumption made in the ambient modeling was that only two of the silos can operate at once. The Company will demonstrate compliance through recordkeeping of silo operations. The modeling also assumes that the fabric filters controlling all of these units are operating properly. The Company will use daily visible emission monitoring to fulfill periodic monitoring requirements. The identification of visible emissions will require the Company to take corrective actions to determine the cause of the emissions.

Performance testing for PM and PM₁₀ is required within 365 days from permit issuance on one of the silos. These results should be representative of the other seven.

Pellet Convey System (EU 012), Packaging Dust Control No. 1-3 (EU 013-015), Sugar Storage Conveyor (EU 024), Weibull Bin (EU 025), Starch Bin Receiving (EU 028), Sugar Reclaim System (EU 032), Bag Clipping (EU 033), Brown Sugar Batching (EU 034), Powdered Sugar Reclaim (EU 035), Bag in Box Conveyor (EU 036), and Pulp Pellet Loadout (EU 031)

The emission calculations generally were based on a particulate concentration of 0.02 grains per dry standard cubic foot. The modeling assumes that the fabric filters controlling all of these units are operating properly. The Company will use daily visible emission monitoring to fulfill periodic monitoring requirements. The identification of visible emissions will require the Company to take corrective actions to determine the cause of the emissions.

Performance testing for PM and PM₁₀ is required within 365 days from permit issuance for those units with airflows and stack diameters that allow testing to be technically feasible.

Ash Removal (EU 026, 027)

The PM and PM₁₀ emission limits were based on Minn. R. 7011.0750 and the fact that the units don't operate 8760 hours per year.

Performance testing and periodic monitoring was not required on these units due to the conservative method used to estimate emissions. These units have control equipment and it was not taken into consideration in the emission calculations.

Fugitives Sources - Paved and Unpaved Roads

Permit conditions were included in the permit for fugitive sources to make the assumptions made in the ambient modeling enforceable. In addition, assumptions related to the number of trucks and control/watering activities per day and silt loading/content are included in the permit for the paved and unpaved roads. A Fugitive Emission Parameter Test is required to measure the site specific silt loading/content parameters at the facility. Control activities for paved roads (e.g. vacuum sweeping, water flushing, or broom sweeping and flushing) and watering for unpaved roads are only required during the beet haul period. The control activities made for the roads result in a calculated control efficiency of 78 percent for the paved roads 97 percent for the unpaved roads. Assumptions made for the roads that are not included in the permit are required to be investigated as a part of a study required by the Fugitive Dust Control Plan

Emergency Generator and WWTP Flare (EU 029 and EU 030)

These units were modeled at their uncontrolled maximum potential to emit. Fuel recordkeeping that indicates the type of fuel fired in the unit will be used as periodic monitoring for the generator. The flare is only subject to the general nuisance opacity rule, so no periodic monitoring was deemed necessary.

In addition, some changes were made to the general requirements in the total facility section and to the opacity excursion language which reflect rule changes made since the issuance of the Title V permit.

4. Conclusion

Based on the information provided by the American Crystal Sugar Company, the MPCA has reasonable assurance that the proposed operation of the emission facility, as described in the Air Emission Permit No. 02700001-015, and this TSD, will not cause or contribute to a violation of applicable federal regulations and Minnesota Rules.

Staff Members on Permit Team:

Trent Wickman
Tom Holstrom
Cary Hernandez
Stuart Arkley
Dennis Becker
Margaret McCourtney

Attachment:

- 1) Emission calculations from the application
- 2) Modeling summary
- 3) Additional impacts information