STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
NOTICE OF FINAL PERMIT

In the Matter of an
Application for Permit

Mr. E. O. Morris
Cargill Fertilizer, Inc.
8813 U.S. Highway 41 South
Riverview, Florida 33569

DEP File No. 0570008-036-AC
PSD-FL-315

Enclosed is the FINAL Permit Number PSD-FL-315 for increasing molten sulfur through the molten sulfur handling system, removal of the existing allowable production rate cap for the Nos. 8 and 9 Sulfuric Acid plants, additional digestion capacity for the Phosphoric Acid plant, modification of the Granular Triple Super Phosphate plant, modification of the Animal Feed Ingredient (AFI) plant, construction of a second AFI granulation train, and modification of the No. 5 Diammonium Phosphate plant at the existing Riverview facility in Hillsborough County. This permit is issued pursuant to Chapter 403, Florida Statutes and in accordance with Rule 62-212.400., F.A.C. - Prevention of Significant Deterioration(PSD).

Any party to this order (permit) has the right to seek judicial review of the permit pursuant to Section 120.68, F.S., by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the Department in the Legal Office; and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within 30 (thirty) days from the date this Notice is filed with the Clerk of the Department.

Executed in Tallahassee, Florida.

for C.H. Fancy, P.E., Chief
Bureau of Air Regulation

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this NOTICE OF FINAL PERMIT (including the FINAL permit) was sent by certified mail (*) and copies were mailed by U.S. Mail before the close of business on 11/21/01 to the person(s) listed:

E. O. Morris, Cargill Fertilizer, Inc.*
Gregg Worley, EPA
John Bunyak, NPS
Bill Thomas, DEP-SWD
A. Harmon, HCEPC
David Buff, P.E., Golder Associates, Inc.

Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to §120.52, Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

Victoria Gibson (Clerk) 11/21/01 (Date)

FINAL DETERMINATION

Cargill Fertilizer, Inc.

Permit No. 0570008-036-AC, PSD-FL-315

Tampa Plant

An Intent to Issue an air construction permit to Cargill Fertilizer, Inc. to modify several existing emission units at its phosphate fertilizer manufacturing facility in Hillsborough County, was distributed on October 3, 2001. The Notice of Intent was published in the Tampa Tribune on October 3, 2001. Copies of the draft construction permit were available for public inspection at the Department offices in Tampa and Tallahassee.

Comments were received from the applicant and Environmental Protection Commission of Hillsborough County (EPCHC). These comments were related to editorial changes in the permit, and the Department will make necessary changes to accommodate those comments. An additional comment from EPCHC expressed concerns on specific conditions related to reasonable precautions and record keeping were included in two previous construction permits for the Molten Sulfur Storage and Handling and the GTSP Truck Loading Station, but were not a part of this construction permit. The Department's position is that these conditions do not need to be included in this construction permit, since they are currently in effect, and are not affected or superceded in any way by this construction permit.

EPA in its letter dated November 2, 2001 submitted comments during the 30-day public comment period. The comments are as follows:

1. *The table in Section II.F. of the preliminary determination shows that there will be SAM emission increases related to the modifications of the EPP Plant and AFI Plant No. 1 and the construction of AFI Plant No. 2. However, no best available control technology (BACT) analysis was performed for these units with respect to SAM emissions. Although the SAM emission increases are relatively small (0.1 and 0.2 tons per year, respectively), PSD review requires that BACT be applied to all new or modified emission units with <u>any increase</u> in emissions of pollutants subject to PSD review. Therefore, the final determination should include BACT analyses for the EPP Plant and AFI Plants Nos. 1 and 2.*

<u>Department's response:</u>

The Department agrees with EPA's comment and will include BACT analyses for SAM emissions for the EPP Plant and AFI Plants Nos. 1 and 2. It should be noted that SAM emissions from these plants represent only 0.3 percent of the total emissions from the entire complex. SAM emissions from Sulfuric Acid Plants Nos. 8 and 9 represent the majority of the emissions and the application of BACT for these plants of 0.10 lb/ton of

100% H_2SO_4 is the most stringent BACT issued to date for a Sulfuric Acid Plant in the state.

2. *Section IV.H., Additional Impact Analysis, of the preliminary determination does not address the potential impacts of fluoride and SAM emissions in the PSD class II area where the Riverview facility is located. Furthermore, the permit application contains an evaluation which shows the maximum ambient concentration of fluorides on a 3-hour basis (18.1 ug/m^3) to be higher than the 3-hour value cited in the application that can cause damage to sensitive species of vegetation (16 ug/m^3). EPA recommends that the Florida Department of Environmental Protection comment on the likelihood that fluoride and SAM emissions may cause adverse impacts within the area near the Riverview facility.*

Department's response:

The applicant modeled the impacts of fluoride and SAM emissions due to the project and presented these values in the May 2001 revised submittal. No ambient air quality standards or increments for these pollutants have yet been developed to compare the modeled results to. The applicant provided further qualitative information on fluoride emissions in response to this comment, and evaluated the predicted impacts on resources in the area. This information indicates that no adverse impacts due to fluoride emissions on resources in the Riverview vicinity are expected. The applicant qualitatively addressed the impact of SAM emissions on soils in the area of the plant and indicated that no adverse impacts are expected. In addition, for SAM emissions, the BACT for the sulfuric acid plants represents the most stringent BACT determination issued to date.

The final action of the Department is to issue the permit and BACT with the changes noted above.

Department of Environmental Protection

Jeb Bush
Governor

Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

David B. Struhs
Secretary

PERMITTEE:

Cargill Fertilizer, Inc.
8813 U.S. Highway 41 South
Riverview, Florida 33569

File No.	0570008-036-AC
Permit No.	PSD-FL-315
SIC No.	2874
Project:	Facility Expansion
Expires:	December 1, 2005

Authorized Representative:

Mr. E. O. Morris
Vice President of Environmental, Health and Safety

PROJECT AND LOCATION:

Permit for increased molten sulfur through the Molten Sulfur Handling System, removal of the existing allowable production rate cap for the Nos. 8 and 9 Sulfuric Acid Plants, additional digestion volume associated with the Dorrco Reactor at the Phosphoric Acid Plant, modification of the GTSP Plant, modification of the AFI Plant No. 1, construction of the AFI Plant No. 2, and modification of the No. 5 DAP Plant. The project is located at the Cargill Fertilizer facility, 8813 US Highway 41 South, Riverview, Hillsborough County. UTM coordinates are Zone 17; 362.9 km E; 3082.5 km N.

STATEMENT OF BASIS:

This construction permit is issued under the provisions of Chapter 403 of the Florida Statutes (F.S.), and the Florida Administrative Code (F.A.C.) Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297. The above named permittee is authorized to modify the facility in accordance with the conditions of this permit and as described in the application, approved drawings, plans, and other documents on file with the Department of Environmental Protection (Department).

ATTACHED APPENDICES ARE MADE A PART OF THIS PERMIT:

Appendix BD	BACT Determination
Appendix GC	Construction Permit General Conditions

Howard L. Rhodes, Director
Division of Air Resources
Management

SECTION I – FACILITY INFORMATION

FACILITY DESCRIPTION

Cargill Fertilizer, Inc. operates a phosphate fertilizer manufacturing facility near Riverview, Hillsborough County, Florida, producing sulfuric acid, wet-process phosphoric acid, ammoniated phosphate fertilizers and related products. The company has applied to increase molten sulfur through the Molten Sulfur Handling System, remove the existing allowable production rate cap for the Nos. 8 and 9 Sulfuric Acid Plants, increase the digestion volume associated with the Dorrco Reactor at the Phosphoric Acid Plant, modify the GTSP Plant, modify the AFI Plant No. 1, construct the AFI Plant No. 2, and modify the No. 5 DAP Plant. As a result of these changes, increases in the actual particulate matter (PM), PM with an aerodynamic diameter of 10 microns or less (PM_{10}), sulfur dioxide (SO_2), fluoride (F), nitrogen oxides (NO_x), sulfuric acid mist (SAM), carbon monoxide (CO), total reduced sulfur (TRS), and volatile organic compounds (VOC) emissions will occur.

REGULATORY CLASSIFICATION

The Cargill Riverview Plant is classified as a "Major or Title V Source" per Rule 62-210.200, F.A.C., because it has the potential to emit at least 100 tons per year of particulate matter when potential fugitive emissions are included with potential controlled emissions.

Phosphate rock processing plants are listed as a Major Facility Category in Table 62-212.400-1, F.A.C., "Major Facility Categories." Therefore, stack and fugitive emissions of over 100 TPY of a regulated pollutant are sufficient to classify the installation as a "Major Facility" per the definitions in Rule 62-210.200, F.A.C., subject to the Significant Emission Rates given in Table 62-212.400-2, F.A.C. and the requirements of Rule 62-212.400, F.A.C., Prevention of Significant Deterioration (PSD) and Best Available Control Technology (BACT).

PERMIT SCHEDULE:

- 03-13-2001: Original Application Received
- 08-16-2001: Revised Application Complete
- 10-03-2001: Mailed Intent to Issue Permit
- 10-03-2001: Notice published in the Tampa Tribune

RELEVANT DOCUMENTS:

The documents listed below are specifically related to this permitting action and form the basis of the permit. They are on file with the Department:

- Application received 03-13-2001
- Department letters dated 04-11-2001, 04-24-2001and 06-28-2001
- Applicant letters received 04-30-2001, 05-29-2001 and 08-16-2001
- National Park Service's e-mail received 06-22-2001
- Hillsborough County's letter received 04-20-2001
- Technical Evaluation and Preliminary Determination dated 10-2-2001
- Best Available Control Technology determination (issued concurrently with permit)
- Hillsborough County's comments e-mail dated 10-17-2001
- EPA's comments letter dated 11-02-2001
- Applicant's comments e-mail dated 11-12-01

SECTION II – ADMINISTRATIVE REQUIREMENTS

1. Regulating Agencies: All documents related to applications for permits to operate, reports, tests, minor modifications and notifications shall be submitted to the Department's Southwest District Office, 3804 Coconut Palm Drive, Tampa, Florida 33619-8218. All applications for permits to construct or modify an emissions unit(s) *subject to the Prevention of Significant Deterioration or Nonattainment (NA) review requirements* should be submitted to the Bureau of Air Regulation (BAR), Florida Department of Environmental Protection (FDEP), 2600 Blair Stone Road, MS 5505, Tallahassee, Florida 32399-2400 (phone number 850/488-0114).
2. General Conditions: The owner and operator is subject to and shall operate under the attached General Permit Conditions G.1 through G.15 listed in Appendix GC of this permit. General Permit Conditions are binding and enforceable pursuant to Chapter 403 of the Florida Statutes. [Rule 62-4.160, F.A.C.]
3. Terminology: The terms used in this permit have specific meanings as defined in the corresponding chapters of the Florida Administrative Code.
4. Applicable Regulations, Forms and Application Procedures: Unless otherwise indicated in this permit, the construction and operation of the subject emissions unit shall be in accordance with the capacities and specifications stated in the application. The facility is subject to all applicable provisions of Chapter 403, F.S. and Florida Administrative Code Chapters 62-4, 62-110, 62-204, 62-212, 62-213, 62-296, 62-297 and the Code of Federal Regulations Title 40, Part 60, adopted by reference in the Florida Administrative Code (F.A.C.) regulations. The permittee shall use the applicable forms listed in Rule 62-210.900, F.A.C. and follow the application procedures in Chapter 62-4, F.A.C. Issuance of this permit does not relieve the facility owner or operator from compliance with any applicable federal, state, or local permitting or regulations. [Rules 62-204.800, 62-210.300 and 62-210.900, F.A.C.]
5. Expiration: This air construction permit shall expire on **December 1, 2005** [Rule 62-210.300(1), F.A.C.]. The permittee may, for good cause, request that this construction permit be extended. Such a request shall be submitted to the Bureau of Air Regulation prior to 60 days before the expiration of the permit. However, the permittee shall promptly notify the Department's Southwest District Office of any delays in completion of the project which would affect the startup day by more than 90 days. [Rule 62-4.090, F.A.C]
6. Application for Title V Permit: An application for a Title V operating permit, pursuant to Chapter 62-213, F.A.C., must be submitted to the Department's Southwest District Office. [Chapter 62-213, F.A.C.]
7. Permit Approval: Approval to construct shall become invalid if construction is not commenced within 18 months after receipt of such approval, or if construction is discontinued for a period of 18 months or more, or if construction is not completed within a reasonable time. The Department may extend the 18-month period upon a satisfactory showing that an extension is justified. [40 CFR 52.21(r)(2)].
8. BACT Determination: In conjunction with extension of the 18-month periods to commence or continue construction, or extension of the permit expiration date, the permittee may be required to demonstrate the adequacy of any previous determination of best available control technology for the source. [40 CFR 52.21(j)(4)]
9. Annual Reports: Pursuant to Rule 62-210.370(2), F.A.C., Annual Operation Reports, the permittee is required to submit annual reports on the actual operating rates and emissions from this facility. Annual operating reports using DEP Form 62-210.900(4) shall be sent to the DEP's Southwest District office by March 1st of each year.
10. Stack Testing Facilities: Stack sampling facilities shall be installed in accordance with Rule 62-297.310(6), F.A.C.

SECTION II – ADMINISTRATIVE REQUIREMENTS

11. Quarterly Reports: Quarterly excess emission reports, in accordance with 40 CFR 60.7 (a)(7) (c) (1997 version), shall be submitted to the DEP's Southwest District office.

12. New or Additional Conditions: For good cause shown and after notice and an administrative hearing, if requested, the Department may require the permittee to conform to new or additional conditions. The Department shall allow the permittee a reasonable time to conform to the new or additional conditions, and on application of the permittee, the Department may grant additional time. [Rule 62-4.080, F.A.C.]

SECTION III - EMISSION UNIT(S) SPECIFIC CONDITIONS

SUBSECTION A. COMMON CONDITIONS

The Specific Conditions listed in this section apply to the following emission units:

EMISSION UNIT NO.	EMISSION UNIT DESCRIPTION
063-068, 074, 107	Molten Sulfur Handling System
005	No. 8 Sulfuric Acid Plant
006	No. 9 Sulfuric Acid Plant
073	Phosphoric Acid Plant
007	EPP Plant
078-081, 103	AFI Plants No. 1 and 2
055	No. 5 DAP Plant

1. Unless otherwise indicated, the modification/construction and operation of the molten sulfur handling system, the Nos. 8 and Sulfuric Acid Plants, the Phosphoric Acid Plant, the EPP Plant, the AFI Plant Nos. 1 and 2, and the No. 5 DAP Plant shall be in accordance with the capacities and specifications stated in the application. **[Rule 62-210.300, F.A.C.]**

2. Before this construction permit expires, and annually, the subject emissions units shall be tested for compliance with the applicable emission limits. For the duration of all tests the emission units shall be operating at permitted capacity. Permitted capacity is defined as 90-100 percent of the maximum operating rate allowed by the permit. If it is impracticable to test at permitted capacity, then the emission unit may be tested at less than permitted capacity (i.e., 90% of the maximum operating rate allowed by the permit); in this case, subsequent emission unit operation is limited to 110 percent of the test load until a new test is conducted. Once the emission unit is so limited, then operation at higher capacities is allowed for no more than 15 consecutive days for the purposes of additional compliance testing to regain the permitted capacity in the permit. **[Rule 62-297.310, F.A.C.]**

3. The Department's Southwest District office shall be notified in writing at least 15 days prior to source testing. Written reports of the test results shall be submitted to that office within 45 days of test completion. **[Rule 62-297.310, F.A.C.]**

4. The compliance test procedures shall be in accordance with EPA Reference Methods 1, 2, 3, 4, 5, 7E, 8, 9, and 13A or 13B, as appropriate, as published in 40 CFR 60, Appendix A, or as otherwise specifically authorized by the Department **[Rules 62-204.800 and 62-297.310(7)(c), F.A.C.]**

5. No person shall cause, suffer, allow, or permit the discharge of air pollutants which cause or contribute to an objectionable odor. **[Rule 62-296.320, F.A.C.]**

6. No person shall circumvent any air pollution control device, or allow the emission of air pollutants without the applicable air pollution control device operating properly. **[Rule 62-210.650, F.A.C.]**

7. The subject emissions units shall be subject to the following:

- Excess emissions resulting from startup, shutdown or malfunction of any source shall be permitted providing (1) best operational practices to minimize emissions are adhered to and (2) the duration of excess emissions shall be minimized but in no case exceed two hours in any 24 hour period unless specifically authorized by the Department for longer duration. **[Rule 62-210.700, F.A.C.]**

- Excess emissions which are caused entirely or in part by poor maintenance, poor operation, or any other equipment or process failure which may reasonably be prevented during startup, shutdown, or malfunction shall be prohibited. **[Rule 62-210.700, F.A.C.]**

- Considering operational variations in types of industrial equipment operations affected by this rule, the Department may adjust maximum and minimum factors to provide reasonable and practical regulatory controls consistent with the public interest. **[Rule 62-210.700, F.A.C.]**

- In case of excess emissions resulting from malfunctions, each source shall notify the Department or the appropriate Local Program in accordance with Rule 62-4.130, F.A.C. A full written report on the malfunctions shall be submitted in a quarterly report, if requested by the Department. **[Rule 62-210.700, F.A.C.]**

SUBSECTION B. Molten Sulfur Handling System

The Specific Conditions listed in this section apply to the following emission units:

EMISSION UNIT NO.	EMISSION UNIT DESCRIPTION
063	Molten Sulfur Storage Tank No. 1
063	Molten Sulfur Storage Tank No. 2
063	Molten Sulfur Storage Tank No. 3
066	Molten Sulfur Storage Pit No. 7
067	Molten Sulfur Storage Pit No. 8
068	Molten Sulfur Storage Pit No. 9
074	Truck Loading Station
107	GTSP Molten Sulfur Storage Tank

1. a. The molten sulfur through the molten sulfur handling system shall not exceed 2,408,483 tons per year (TPY). **[Rule 62-210.200, F.A.C.]**

   b. The following molten sulfur throughput rates for the emission units listed below shall not be exceeded **[Rule 62-210.200, F.A.C.]**:

EMISSION UNIT/SOURCE	CAPACITY (METRIC TONS)	MAXIMUM THROUGHPUT (TPY)
063, Tank No. 1	18,000	802,828
064, Tank No. 2	18,000	802,828
065, Tank No. 3	18,000	802,828
066, Pit No. 7	115	492,361
067, Pit No. 8	115	492,361
068, Pit No. 9	145	492,361
074, Truck Loading	--	800,000
107, GTSP Sulfur Tank	340	131,400

2. The molten sulfur handling system may operate up to 8,760 hours per year. **[Rule 62-210.200, F.A.C.]**

3. Sulfur particulate matter emissions from each molten sulfur handling source shall not exceed 1 TPY. **[Rule 62-296.411(5)(b), F.A.C.]**

4. For emission inventory and PSD purposes, the estimated maximum emissions from the sources in the molten sulfur storage and handling system are:

EU ID No.	Source	PM/PM_{10}		SO_2		TRS/H_2S		VOC	
		lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
063	Tank No. 1	0.12	0.33	1.99	2.95	0.95	1.41	1.42	2.10
063	Tank No. 2	0.12	0.33	1.99	2.95	0.95	1.41	1.42	2.10
063	Tank No. 3	0.12	0.33	1.99	2.95	0.95	1.41	1.42	2.10
066	Pit No. 7	0.44	0.37	0.04	0.04	0.02	0.02	0.03	0.03
067	Pit No. 8	0.44	0.37	0.04	0.04	0.02	0.02	0.03	0.03
068	Pit No. 9	0.44	0.37	0.04	0.04	0.02	0.02	0.03	0.03
074	Truck Loading Station	0.02	0.02	0.03	0.04	0.01	0.02	0.02	0.03
107	GTSP Sulfur Tank	0.19	0.85	0.15	0.66	0.07	0.32	0.11	0.47

5. Visible emissions from any emission point in the molten sulfur facility shall not exceed 10% opacity (6-minute average), except, visible emissions from any emission point during ship unloading shall not exceed 15% opacity (6-minute average). **[Rule 62-296.411(1)(g) and (i), F.A.C.]**

6. The compliance test procedures for visible emissions shall be in accordance with EPA Reference Method 9 as published in 40 CFR 60, Appendix A. **[Rule 62-297.401, F.A.C.]**

SUBSECTION C. Nos. 8 and 9 Sulfuric Acid Plants

The Specific Conditions listed in this section apply to the following emission units:

EMISSION UNIT NO.	EMISSION UNIT DESCRIPTION
005	No. 8 Sulfuric Acid Plant
006	No. 9 Sulfuric Acid Plant

1. The sulfuric acid (H_2SO_4) production rate of the No. 8 Sulfuric Acid Plant (SAP) system shall not exceed 2,700 tons per day of 100% H_2SO_4. **[Rule 62-210.200, F.A.C.]**

2. The sulfuric acid production rate of the No. 9 SAP system shall not exceed 3,400 tons per day of 100% H_2SO_4. **[Rule 62-210.200, F.A.C.]**

3. The Nos. 8 and 9 SAPs may operate up to 8,760 hours per year each. **[Rule 62-210.200, F.A.C.]**

4. Sulfur dioxide (SO_2) emissions shall not exceed the following for each SAP **[Rule 62-210.200, F.A.C.]**:

SAP No.	lb/ton of 100% H_2SO_4	lb/hr	TPY
8	4, 3-hr block average	450.0	--
8	3.5, 24-hr block average	393.8	1,724.6
9	4, 3-hr block average	566.7	--
9	3.5, 24-hr block average	495.8	2,171.8

5. Sulfuric acid mist emissions shall not exceed the following for each plant **[Rule 62-210.200, F.A.C.]**:

SAP No.	lb/ton of 100% H_2SO_4	lb/hr	TPY
8	0.10	11.3	49.3
9	0.10	14.2	62.1

6. Visible emissions from each SAP shall not exceed 10% opacity (except during start-up, shutdown, or malfunction **[Rule 62-210.700, F.A.C.]**). **[Rules 62-296.402(2)(a), F.A.C., 62-204.800, F.A.C., and 40 CFR 60.83(a)(2)]**

7. The compliance test procedures for SO_2 and sulfuric acid mist shall be in accordance with EPA Reference Method 8 as published in 40 CFR 60, Appendix A. **[Rule 62-296.402(3), F.A.C.]**

8. The compliance test procedures for visible emissions shall be in accordance with EPA Reference Method 9 as published in 40 CFR 60, Appendix A. **[Rule 62-297.401, F.A.C.]**

9. A continuous emissions monitoring system (CEMS) shall be installed, calibrated, maintained, operated, and used to determine compliance with the 24-hour emissions limit for SO_2. The CEMS shall be installed and certified before the initial performance test and operated in compliance with 40 CFR 60, Appendix F, Quality Assurance Procedures (1997 version) or other Department-approved QA plan; 40 CFR 60, Appendix B, Performance Specification 2 (1997 version).

   The CEMS shall calculate and record emission rates in units of pounds SO_2 per ton of 100 percent sulfuric acid produced. Each operating day, the average SO_2 emission rate for the previous 24 hours shall be calculated and recorded. Emissions shall be calculated in units of pounds of SO_2 per ton of 100 percent acid produced using one of the methods specified in 40 CFR 60.84. Averages are to be calculated as the arithmetic mean of each monitored operating hour in which sulfur is burned in the unit and at least two emission measurements are recorded at least 15 minutes apart. Data taken during periods of startup, or when sulfur is not burned in the unit, or when the CEMS is out of control as defined in 40 CFR 60, Appendix F, Section 5.2, shall be excluded from the 24-hour average. Data recorded during periods of shutdown, malfunction, load change, and continuous operating periods shall be included in the daily calculation of the 24-hour average.

   To the extent the monitoring system is available to record emissions data, the CEMS shall be operated and shall record data at all operating hours when sulfur is burned the unit, including periods of startup, shutdown, load change, continuous operation and malfunction. Monitor downtimes and excess emissions based on 3-hour averages, which include startup emissions, shall be reported on a quarterly basis using the SUMMARY REPORT in 40 CFR 60.7. A detailed report of the cause, duration, magnitude, and corrective action take or preventative measures adopted for each excess emission occurrence, and a listing of monitor downtime occurrences shall accompany the SUMMARY REPORT when the total duration of excess emissions is 1% or greater or if the monitoring system downtime is 5% greater of the total monitored operating hours.

   The monitoring device shall meet the applicable requirements of Chapter 62-204, F.A.C., 40 CFR 60, Appendix F, and 40 CFR 60.13, including certification of each CEMS in accordance with 40 CFR 60, Appendix B, Performance Specifications and 40 CFR 60.7(a)(5) Notification Requirements. Data on monitoring equipment specifications, manufacturer, type calibration and maintenance requirements, and the proposed location of each stack probe shall be provided to the Department for review at least 30 days prior to installation of a new CEMS. **[Rules 62-4.070(3), F.A.C. and 62-204.800, F.A.C.]**

SUBSECTION D. Phosphoric Acid Plant

The Specific Conditions listed in this section apply to the following emission units:

EMISSION UNIT NO.	EMISSION UNIT DESCRIPTION
073	Phosphoric Acid Plant

1. The production rate of the Phosphoric Acid Plant shall not exceed a daily average of 170 tons per hour of P_2O_5. **[Rule 62-210.200, F.A.C.]**

2. The Phosphoric Acid Plant may operate up to 8,760 hours per year. **[Rule 62-210.200, F.A.C.]**

3. Fluoride emissions from the Phosphoric Acid Plant affected facility components shall not exceed 0.012 lb/ton of equivalent P_2O_5 feed, 2.04 lb/hr, and 8.9 TPY. **[Rule 62-212.400, F.A.C.]**

4. The compliance test procedures for fluorides shall be in accordance with EPA Reference Method 13A or 13B as published in 40 CFR 60, Appendix A. **[Rule 62-297.401(13), F.A.C.]**

SUBSECTION E. Enhanced Phosphate Products (EPP) Plant

The Specific Conditions listed in this section apply to the following emission units:

EMISSION UNIT NO.	EMISSION UNIT DESCRIPTION
007	EPP Plant

1. a. The production rate of the EPP plant shall not exceed 92 tons per hour or 2,208 tons per day of GTSP (granular triple super phosphate). **[Rule 62-210.200, F.A.C.]**
   b. The production rate of the EPP Plant shall not exceed 100 tons per hour or 2,400 tons per day of AP (ammoniated phosphates). **[Rule 62-210.200, F.A.C.]**

2. The heat input rate to the rotary dryer shall not exceed 60 MMBtu/hr (daily average). **[Rule 62-210.200, F.A.C.]**

3. The EPP plant rotary dryer shall be fired with natural gas only, except that No. 2 fuel oil with a maximum sulfur content of 0.5% by weight is allowed as back-up fuel. No. 2 fuel oil shall be fired for no more than 400 hr/yr. **[Permit No. 0570008-014-AV]**

4. The EPP plant may operate up to 8,760 hours per year. **[Rule 62-210.200, F.A.C.]**

5. Particulate emissions from the EPP plant shall not exceed the following **[Rule 62-212.400, F.A.C.]**:

Production Mode	lb/ton product	lb/hr	TPY
GTSP	0.13	12.0	52.6
AP	0.08	8.0	35.04

6. Fluoride emissions from the EPP plant shall not exceed the following **[Rule 62-212.400, F.A.C.]**:

Production Mode	lb/ton P_2O_5 input	lb/hr	TPY
GTSP	0.058	2.5	10.75
AP	0.041	4.1	17.96

7. Visible emissions from the EPP plant shall not exceed 20% opacity. **[Rules 62-296.705(2)(a) and 62-296.320(4)(b)(1), F.A.C.]**

8. The compliance test procedures for particulates shall be in accordance with EPA Reference Methods 5 or 5A as published in 40 CFR 60, Appendix A. **[Rule 62-297.401(5), F.A.C.]**

9. The compliance test procedures for fluorides shall be in accordance with EPA Reference Methods 13A or 13B as published in 40 CFR 60, Appendix A. **[Rule 62-297.401(13), F.A.C.]**

SUBSECTION F. Animal Feed Ingredient (AFI) Plants No. 1 and 2

The Specific Conditions listed in this section apply to the following emission units:

EMISSION UNIT NO.	EMISSION UNIT DESCRIPTION
078	AFI Plant No. 1
103	AFI Plant No. 2
079	Diatomaceous Earth Silo
080	Limestone Silo
081	Animal Feed Plant Loadout System

1. The production rate of the AFI Plant No. 1 shall not exceed 1,080 tons per day of AFI. **[Rule 62-210.200, F.A.C.]**

2. The production rate of the AFI Plant No. 2 shall not exceed 1,200 tons per day of AFI. **[Rule 62-210.200, F.A.C.]**

3. The maximum natural gas usage for the AFI Plants No. 1 and 2 dryers shall not exceed 93,000 standard cubic feet (scf)/hr (annual average) each. **[Permit No. 0570008-014-AV]**

4. The maximum new No. 2 fuel oil usage for the AFI Plants No. 1 and 2 dryers shall not exceed 662 gal/hr (daily average) each. **[Permit No. 0570008-014-AV]**

5. The AFI Plants No. 1 and 2 may operate up to 8,760 hours per year each. **[Rule 62-210.200, F.A.C.]**

6. Emissions from the AFI Plants No. 1 and 2 shall not exceed the following **[Rule 62-210.400, F.A.C.]**:

Emission Unit	PM/PM_{10}			Fluorides	
	Grains per DSCF	lb/hr	TPY	lb/hr	TPY
AFI Plant No. 1 Granulation System	N/A	8	35	N/A	N/A
Defluorination System	N/A	N/A	N/A	2.11	9.25
Milling, Classification, and Cooling Equipment Train No. 1	0.012	5	23	N/A	N/A
AFI Plant No. 2 Granulation System	N/A	8	35	N/A	N/A
Milling, Classification, and Cooling Equipment Train No. 2	0.012	5	23	N/A	N/A
DE Silo	0.012	0.053	0.23	N/A	N/A
Limestone Silo	0.012	0.32	1.40	N/A	N/A
Loadout System	0.012	2.06	9.01	N/A	N/A
Total for AFI Plants No. 1 and 2	**N/A**	**28.72**	**125.78**	**2.1**	**9.25**

7. Visible emissions from the AFI Plant No. 1 common plant stack and AFI Plant No. 2 common plant stack shall be less than 15% opacity each. **[Permit No. 0570008-008-AC]**

8. The AFI Plants No. 1 and 2 dryers shall be fired with natural gas only, except that new No. 2 fuel oil with a maximum sulfur content of 0.5% (by weight) is allowed as a back-up fuel. No. 2 fuel oil shall not be fired for more than 400 hr/yr in each dryer. **[Permit No. 0570008-014-AV]**

9. The compliance test procedures for particulates shall be in accordance with EPA Reference Method 5 as published in 40 CFR 60, Appendix A. **[Rule 62-297.401(5), F.A.C.]**

10. The compliance test procedures for fluorides shall be in accordance with EPA Reference Method 13A or 13B as published in 40 CFR 60, Appendix A. **[Rule 62-297.401(13), F.A.C.]**

11. The compliance test procedures for visible emissions shall be in accordance with EPA Reference Method 9 as published in 40 CFR 60, Appendix A. **[Rule 62-297.401(9), F.A.C.]**

SUBSECTION G. No. 5 DAP Plant

The Specific Conditions listed in this section apply to the following emission units:

EMISSION UNIT NO.	EMISSION UNIT DESCRIPTION
055	No. 5 DAP Plant

1. The process input rate of the No. 5 DAP Plant shall not exceed 1,764 tons per day of 100% phosphorous pentoxide (P_2O_5). **[Rule 62-210.200, F.A.C.]**

2. The heat input rate to the rotary dryer shall not exceed 40 MMBtu/hr (monthly average). **[Rules 62-4.160(2) and 62-210.200, F.A.C.]**

3. The rotary dryer shall be fired with natural gas only, except that No. 2 fuel oil with a maximum sulfur content of 0.31% by weight is allowed as a back-up fuel. No. 2 fuel oil shall not be fired for more than 400 hr/yr. **[Permit No. 0570008-014-AV]**

4. The No. 5 DAP Plant may operate up to 8,760 hours per year. **[Rule 62-210.200, F.A.C.]**

5. Emissions from the No. 5 DAP Plant shall not exceed the following **[Rule 62-212.400, F.A.C.]**:

Pollutant	Maximum Allowable Emissions		
	lb/ton P_2O_5	lb/hr	TPY
PM/PM_{10}	0.174	12.8	56.1
Fluorides	0.04	2.9	12.9

6. Visible emissions from the No. 5 DAP Plant shall not exceed 10% opacity. **[Permit No. 0570008-014-AV]**

7. The compliance test procedures for particulates shall be in accordance with EPA Reference Method 5 as published in 40 CFR 60, Appendix A. **[Rule 62-297.410(5), F.A.C.]**

8. The compliance test procedures for fluorides shall be in accordance with EPA Reference Methods 13A or 13B as published in 40 CFR 60, Appendix A. **[Rule 62-297.410(13), F.A.C.]**

9. The compliance test procedures for visible emissions shall be in accordance with EPA Reference Method 9 as published in 40 CFR 60, Appendix A. **[Rule 62-297.410(9), F.A.C.]**

APPENDIX BD
BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION (BACT)

Cargill Fertilizer, Inc.
Tampa Plant Expansion
PSD-FL-315/0570008-036-AC
Riverview, Hillsborough County

Cargill Fertilizer, Inc. has applied to modify several existing emission units at its phosphate fertilizer manufacturing facility located in Riverview, Florida. The proposed changes will include increased molten sulfur through the molten sulfur handling system, additional digestion capacity associated with the Dorrco Reactor at the Phosphoric Acid plant (PAP), modification of the Granular Triple Super Phosphate (GTSP) plant, modification of the Animal Feed Ingredient (AFI) plant, construction of a second AFI granulation train, and modification of the No. 5 Diammonium Phosphate (DAP) plant. Cargill has also requested removal of the existing allowable production rate cap for the Nos. 8 and 9 Sulfuric Acid (H_2SO_4) plants, to allow these plants to simultaneously operate up to their maximum capacities, with a reduction in allowable emissions. As a result of this project, increases in emissions of fluoride (F), sulfur dioxide (SO_2), nitrogen oxides (NO_X), sulfuric acid mist (SAM), carbon monoxide (CO), volatile organic compound (VOC), and total reduced sulfur (TRS), particulate matter (PM), and particulate matter less than or equal to 10 micrometers (PM_{10}) from the proposed modifications may occur.

The increases in emissions of F, SO_2, NO_X, SAM, PM, and PM_{10} will exceed the significant emission rates listed in Table 212.400-2 of Rule 62-212.400, Florida Administrative Code (F.A.C.). The project is therefore subject to Prevention of Significant Deterioration (PSD) review for F, SO_2, NO_x, SAM, PM, and PM_{10} in accordance with 62-212.400, F.A.C. A Best Available Control Technology (BACT) determination is part of the review required by Rules 62-212.400 and 62-296, F.A.C.

DATE OF RECEIPT OF COMPLETE BACT APPLICATION:

Original application received on March 13, 2001. BACT application was complete on August 16, 2001.

BACT DETERMINATION PROCEDURE:

In accordance with Chapter 62-212.400, F.A.C., this BACT determination is based on the maximum degree of reduction of each pollutant emitted which the Department of Environmental Protection (Department), on a case by case basis, taking into account energy, environmental and economic impacts, and other costs, determines is achievable through application of production processes and available methods, systems, and techniques. In addition, the regulations state that, in making the BACT determination, the Department shall give consideration to:

- Any Environmental Protection Agency determination of BACT pursuant to Section 169, and any emission limitation contained in 40 CFR Part 60 - Standards of Performance for New Stationary Sources or 40 CFR Part 61 - National Emission Standards for Hazardous Air Pollutants.
- All scientific, engineering, and technical material and other information available to the Department.
- The emission limiting standards or BACT determination of any other state.

- The social and economic impact of the application of such technology.

The EPA currently stresses that BACT should be determined using the "top-down" approach. The first step in this approach is to determine, for the emission unit in question, the most stringent control available for a similar or identical emission unit or emission unit category. If it is shown that this level of control is technically or economically unfeasible for the emission unit in question, then the next most stringent level of control is determined and similarly evaluated. This process continues until the BACT level under consideration cannot be eliminated by any substantial or unique technical, environmental, or economic objections.

The air pollutant emissions from this facility can be grouped into categories based upon the control equipment and techniques that are available to control emissions from these emission units. Using this approach, the emissions can be classified as indicated below:

- ***Fluorides*** (primarily HF). Controlled generally by scrubbing with pond water.
- ***Particulate Matter*** (PM, PM_{10}). Controlled generally by wet scrubbing or filtration.
- ***Combustion Products*** (SO_2, NO_x). NO_X controlled generally by good combustion of clean fuels. SO_2 controlled generally by scrubbing when quantities are substantial.
- ***Products of Incomplete Combustion*** (CO, VOC). Controlled generally by proper combustion.

Grouping the pollutants in this manner facilitates the BACT analysis because it enables the pollutant control equipment and the corresponding energy, economic, and environmental impacts to be examined on a common basis. Although all of the pollutants addressed in the BACT analysis may be subject to a specific emission limiting standard as a result of PSD review, the control of "non-regulated" air pollutants is considered in imposing a more stringent BACT limit on a "regulated" pollutant (i.e., PM, SO_2, H_2SO_4, fluorides, etc.), if a reduction in "non-regulated" air pollutants can be directly attributed to the control device selected as BACT for the abatement of the "regulated" pollutants.

In the case of the proposed project at Cargill, annual emissions of F, SO_2, NO_x, SAM, PM, and PM_{10} are above significant emission rates triggering review for these pollutants. Therefore, since the proposed project involves physical modification to the plant the BACT analysis will address emissions of F, SO_2, NO_x, SAM, PM, and PM_{10}.

BACT EMISSION LIMITS PROPOSED BY APPLICANT:

1. Molten Sulfur Handling System

POLLUTANT	EMISSION LIMIT	LIMIT BASIS	CONTROL TECHNOLOGY
VE	10% opacity, except 15% during ship unloading	Permit No. 0570008-014-AV	Wet scrubbers to control emissions from storage tanks while filling and from truck loading station.

2. No. 8 Sulfuric Acid Plant

POLLUTANT	EMISSION LIMIT	LIMIT BASIS	CONTROL TECHNOLOGY
SO_2	393.8 lb/hr 450.0 lb/hr	3.5 lb/ton of 100% H_2SO_4 for 24-hour average; 4 lb/ton of 100% H_2SO_4 for 3-hour average	Double-absorption system
SAM	11.3 lb/hr	0.10 lb/ton of 100% H_2SO_4	Mist eliminator
NO_x	N/A	N/A	Good combustion practices

3. No. 9 Sulfuric Acid Plant

POLLUTANT	EMISSION LIMIT	LIMIT BASIS	CONTROL TECHNOLOGY
SO_2	495.8 lb/hr 566.7 lb/hr	3.5 lb/ton of 100% H_2SO_4 for 24-hour average; 4 lb/ton of 100% H_2SO_4 for 3-hour average	Double-absorption system
SAM	14.2 lb/hr	0.10 lb/ton of 100% H_2SO_4	Mist eliminator
NO_x	N/A	N/A	Good combustion practices

4. Phosphoric Acid Plant

POLLUTANT	EMISSION LIMIT	LIMIT BASIS	CONTROL TECHNOLOGY
F	2.04 lb/hr	0.012 lb F/ton P_2O_5 input	Packed scrubber, (2) Vescor scrubbers, and Dorrco scrubber

5. Enhanced Phosphate Products (EPP) Plant

POLLUTANT	EMISSION LIMIT	LIMIT BASIS	CONTROL TECHNOLOGY
PM/PM_{10}	12 lb/hr for GTSP Mode 8 lb/hr for AP Mode	0.13 lb/ton product 0.08 lb/ton product	RGCV and dryer Venturi scrubbers
F	2.5 lb/hr for GTSP Mode 4.1 lb/hr for AP Mode	0.058 lb/ton P_2O_5 input 0.041 lb/ton P_2O_5 input	Packed-bed Tailgas scrubbers
SO_2 /SAM	N/A	N/A	Natural gas/low sulfur fuel backup
NO_x	N/A	N/A	Good combustion practices

6. AFI Plants No. 1 and 2

Emission Unit	SO_2/SAM	NO_x	PM/PM_{10}			Fluorides		
	Control Technology	Control Technology	Limit Basis	Emission Limit (lb/hr)	Control Technology	Limit Basis	Emission Limit (lb/hr)	Control Technology
AFI Plant No. 1 Granulation System	Good combustion practices	Good combustion practices	N/A	8	Venturi Scrubber	N/A	N/A	N/A
Defluorination System	N/A	N/A	N/A	N/A	N/A	0.5 lb/batch -hour	2.11	Venturi Scrubber and Packed Cross-flow Scrubber
Milling, Classification, and Cooling Equipment Train No. 1	N/A	N/A	0.012 grains/ dscf	5	Baghouse	N/A	N/A	N/A
AFI Plant No. 2 Granulation System	Good combustion practices	Good combustion practices	N/A	8	Venturi Scrubber	N/A	N/A	N/A
Milling, Classification, and Cooling Equipment Train No. 2	N/A	N/A	0.012 grains/ dscf	5	Baghouse	N/A	N/A	N/A
DE Silo	N/A	N/A	0.012 grains/ dscf	0.053	Baghouse	N/A	N/A	N/A
Limestone Silo	N/A	N/A	0.012 grains/ dscf	0.32	Baghouse	N/A	N/A	N/A
Loadout System	N/A	N/A	0.012 grains/ dscf	2.06	Baghouse	N/A	N/A	N/A

7. No. 5 DAP Plant

POLLUTANT	EMISSION LIMIT	LIMIT BASIS	CONTROL TECHNOLOGY
PM/PM_{10}	12.8 lb/hr	0.17 lb/ton P_2O_5 input	(3) Venturi scrubbers
F	2.9 lb/hr	0.04 lb/ton P_2O_5 input	(2) Tailgas scrubbers
SO_2 /SAM	N/A	N/A	Natural gas/low sulfur fuel backup
NO_x	N/A	N/A	Good combustion practices

BACT ANALYSIS

1. Molten Sulfur Handling System

Sources of air emissions from the molten sulfur system are summarized below:

A. PM/PM_{10}, SO_2, H_2S, and VOC emissions from the stack for the scrubber controlling the molten sulfur storage tanks and truck loading station. Emissions from the three existing tanks are currently uncontrolled.
B. PM/PM_{10}, SO_2, H_2S, and VOC emissions from the molten sulfur storage tank Nos. 1, 2 and 3 vents during periods of natural ventilation
C. PM/PM_{10}, SO_2, H_2S, and VOC emissions from the molten sulfur pits. Emission rates from the molten sulfur pits will not be affected by the proposed project.

A scrubber will be installed to control PM/PM_{10}, VOC, H_2S, and SO_2 emissions from Molten Sulfur Tank Nos. 1, 2, and 3. The scrubber will control emissions of sulfur particulates from the tanks and the planned truck loading station. Based on the very low PM/PM_{10} and SO_2 emissions from the entire sulfur handling system, the proposed BACT is the use of wet scrubbers to control PM/PM_{10} from the storage tanks and no controls for SO_2.

2. Nos. 8 and 9 Sulfuric Acid Plants

The SAPs utilize double absorption technology. In the SAPs, sulfur is burned with dried atmospheric oxygen to produce SO_2. The SO_2 is catalytically oxidized to sulfur trioxide (SO_3) over a catalyst bed. The SO_3 is then absorbed in H_2SO_4 to produce additional H_2SO_4. The remaining SO_2, not previously oxidized, is passed over a final converter bed of catalyst and the SO_3 produced is then absorbed in H_2SO_4. SO_2 and SAM emissions result from the process, as well as a small amount of NO_x.

The control equipment for the SAPs consists of two systems in series. The first system is integral to the H_2SO_4 production process and is the double contact process where the converted SO_3 emissions from the sulfur combustion are absorbed by water in a tower. This process is at least 99 percent efficient at absorbing SO_3. This system is considered process equipment and not considered control equipment. The second system is a high-velocity mist eliminator, which causes moisture (droplets containing sulfuric acid mist) from the double-contact process to be removed from the air stream by impingement. This process is at least 90 percent efficient at removing SAM from the air stream and, therefore, recovering the product.

On a 24-hour average, the proposed BACT emission rate for SO_2 is 3.5 lb/ton. On a 3-hour average, the proposed BACT emission rate is 4.0 lb/ton, equivalent to the NSPS. This higher 3-hour average emission rate is necessary to account for plant process fluctuations and variability.

Recent SO_2 compliance test data indicates that the average SO_2 emissions are between 3.1 and 3.8 lb/ton. These SO_2 levels are above the proposed 3.5 lb/ton, 24-hour average limit, but less than the proposed 3-hour limit of 4.0 lb/ton. Variable emissions result from changing operating rates, process variables, and catalyst aging. An SO_2 emission level lower than 3.5 lb/ton, 24-hour average, may not be achievable on a continuous basis without significant changes to the catalyst system, particularly in light of the potential effects of higher production, catalyst aging, and other

process variables. Since, this project is a modification at an existing plant, the proposed BACT limit for SO_2 of 3.5 lb/ton, 24-hour average, is reasonable based on recent BACT determinations for similar plants. The Department might have made a different determination if this was a new facility.

Recent SAM compliance test data indicates that the average SAM emissions are between 0.031 and 0.052 lb/ton. These SAM levels are below the future allowable emissions of 0.10 lb/ton for the Nos. 8 and 9 SAP. Cargill originally requested a SAM allowable of 0.12 lb/ton, but has agreed to lower that limit to stay below the 5 percent visibility threshold at the Chassahowitzka NWA Class I area. A SAM emission level lower than 0.10 lb/ton may not be achievable on a continuous basis without significant changes to the mist elimination system, particularly in light of the potential effects of higher production, gas velocities, and other process variables. Such changes would require substantial physical modifications to the plants. The proposed BACT limit of 0.10 lb/ton for SAM is the most stringent BACT issued to date for a SAP plant.

3. Phosphoric Acid Plant

Fluoride-containing gases including hydrogen fluoride (HF) are evolved during production of phosphoric acid in the PAP. Fluoride emissions from the existing PAP are currently controlled by three scrubbers. The proposed project will add a new scrubber as well as reduce the fluoride loading to one of the existing scrubbers.

Currently, the existing scrubber system is achieving lower fluoride emission rates than required by the operation permit. As shown in recent stack tests, actual fluoride emission rates for the existing PAP measured during the compliance tests ranged from 0.0024 lb/ton of P_2O_5 to 0.0105 lb/ton of P_2O_5.

Fluoride emissions from the entire PAP are currently limited by Operation Permit No. 0570008-014-AV to 0.0135 lb/ton of P_2O_5 and 10.01 TPY. This limit is based on a BACT determination issued for the PAP on August 27, 1996.

The Department proposed 0.012 lb of F per ton of P_2O_5 input as an emission limit for the PAP. This was based on the recent BACT determination done by the Department for US Agri-Chemicals Corporation in February 2001. The compliance tests submitted by the applicant provided reasonable assurance to the Department that such a limit can be easily complied with. The applicant accepted the lower BACT limit as proposed by the Department. This limit is consistent with the previous BACT limit for the PAP, as well as the most stringent BACT determination to date for the PAP.

4. EPP Plant

The existing GTSP plant is currently equipped with two venturi scrubbers and two tailgas scrubbers. The two primary venturi scrubbers are of the same design, as are the two tailgas scrubbers. One venturi scrubber controls PM emissions and recovers ammonia from the exhaust gases of the reactor, granulator, cooler, and equipment vents (RGCV scrubber). The other venturi scrubber controls PM emissions from the dryer. Similarly, the two tailgas scrubbers are of the same design and control fluoride emissions from the RGCV and the dryer, respectively.

The RGCV venturi scrubber and RGCV tailgas scrubber are in series, as are the dryer venturi scrubber and dryer tailgas scrubber. Exhaust gases go to a common stack for the EPP plant.

Currently, the scrubber systems are achieving lower emission rates than required by permit No. 0570008-014-AV. Emissions measured in recent stack tests from the common stack range from 4.0 to 8.2 lb/hr for PM and 0.43 to 1.56 lb/hr for F. These are equivalent to 0.049 to 0.097 lb of PM per ton of GTSP product, and 0.011 to 0.041 lb of F per ton P_2O_5 input.

Since actual PM/PM_{10} emissions from the EPP plant have been below the allowable emission rate of 21.6 lb/hr, the applicant is proposing to lower the allowable to 12.0 lb/hr, even considering the proposed modifications. The applicant's proposed fluoride emission rate for the EPP plant is 2.5 lb/hr, equivalent to 0.058 lb/ton P_2O_5 input when making GTSP, and 4.1 lb/hr and 0.041 lb/ton P_2O_5 when making MAP or DAP. The proposed BACT limit for MAP/DAP is equal to the most stringent BACT issued to date for a MAP plant.

A previous BACT determination for a DAP plant (IMC-Agrico- New Wales; PSD-FL-241) addressed alternatives for PM/PM_{10} control. The alternatives addressed consisted of a high-energy (>30 in w.c.) venturi scrubber and a medium-energy (15 to 30 in w.c.) venturi scrubber. The IMC plant employs an existing medium-energy venturi scrubbing system. The high costs of adding a high-energy venturi scrubbing system was deemed economically infeasible with incremental cost effectiveness ranging from $50,000 to $75,000 per incremental ton of PM/PM_{10} removed. As a result, the high-energy venturi scrubber option was found to be infeasible, and the existing medium-energy venturi scrubber was selected as BACT.

Cargill also employs medium-energy wet scrubbers in its MAP plant and a medium energy venturi scrubber. Similar to the above analysis, replacing the existing scrubbers with high-energy venturi scrubbers would not be cost effective. Therefore, the existing medium-energy wet scrubbers (ARCO scrubbers and cooler scrubber) represent BACT for the Cargill EPP plant.

A previous BACT determination for a DAP plant (IMC-Agrico New Wales) addressed alternatives for F control. The alternatives included a packed scrubber using either once-through fresh water, neutralized water from a dedicated pond (fresh water makeup), or process cooling pond water. The first option was dismissed due to concern over fresh water usage and plant water balance problems. The second option was dismissed based on economics, with the cost effectiveness estimated at $14,000 per ton of F removed. In Cargill's case, the first two options can be dismissed based on similar considerations. This leaves the third option, using process cooling pond water, as BACT.

The EPP Plant dryer is a small source of NO_x, SO_2 and SAM due to the fuel combustion in the dryer. Good combustion practices constitute BACT for NO_x for this source. SO_2 and SAM emissions are controlled by using natural gas as the primary fuel and using low sulfur content fuel as a backup. This constitutes BACT for SO_2 and SAM for this source.

5. AFI Plant No. 1

The animal feed plant No. 1 uses a combination of baghouses, cyclones, and wet scrubbers to control PM/PM_{10} emissions. Baghouses are used to control all raw material (DE and limestone) handling operations, as well as product loadout operations. Baghouse technology represents the state of the art in control of PM/PM_{10} emissions for material handling sources. Baghouses are

highly efficient and allow collected PM to be recovered as product. Although wet PM controls (i.e., scrubbers) could be employed, an additional liquid waste stream would be generated.

A new scrubber will be added in the defluorination area to replace the existing packed cross-flow scrubber. Air from the defluorination tanks and the defluorinated acid storage tank will be scrubbed in a new venturi scrubber that removes fluorides. The gases will then pass through a new packed cross-flow scrubber to remove additional F emissions. The packed scrubber contains three packed stages and a de-mister stage. Pond water is used as the scrubbing media and is returned to the existing plant process pond cooling system.

The permitted PM/PM_{10} emission limits for the No. 1 AFI granulation train are 8 lb/hr and 35.04 TPY. The applicant is proposing control equipment equivalent to a recent BACT determination by FDEP in the AFI Plant No. 1 Construction Permit No. 0570008-28-AC, issued June 8, 1999, capable of attaining the same emission rates, as BACT for the modified No. 1 AFI plant.

In June 1999, FDEP issued a final Air Construction Permit allowing Cargill to make the modifications necessary to increase production of the existing AFI plant from 580 to 770 TPD of AFI. For that permit, FDEP determined an F emission rate of 0.5 pound per batch per hour (lb/batch-hr) and 1.0 lb/hr total to be BACT. Cargill is modifying the existing acid defluorination system with the addition of a fourth acid batch tank and production of defluorinated acid will increase proportionally with the increase in AFI production for both granulation systems; therefore, the maximum hourly F emission rate will increase to 2.11 lb/hr. The new packed scrubber is expected to provide equivalent or better F control. Given this recent BACT determination by FDEP and the increase in production afforded by the proposed modification, the Department believes that an F emission limit of 0.5 lb/batch-hr or 2.11 lb/hr still represents BACT.

The AFI Plant No. 1 dryer is a small source of NO_x, SO_2 and SAM due to the fuel combustion in the dryer. Good combustion practices constitute BACT for NO_x for this source. SO_2 and SAM emissions are controlled by using natural gas as the primary fuel and using low sulfur content fuel as a backup. This constitutes BACT for SO_2 and SAM for this source.

6. AFI Plant No. 2

Exhaust gases from the new granulation plant dryer and reaction system will be sent to a venturi scrubber and then to a new stack adjacent to the second granulation plant building. The new venturi scrubber will be similar in design to the existing venturi scrubber controlling emissions from the No. 1 granulation system. The milling, classification, and cooling equipment will be vented to a baghouse. The granulation plant venturi scrubber and baghouse will exit through a common stack.

The current PM/PM_{10} emission limit for the material handling sources at the No. 1 AFI plant is 0.012 grain per dry standard cubic foot (gr/dscf), based on FDEP's BACT determination presented in Construction Permit No. 0570008-28-AC, issued on June 8, 1999. Given this recent BACT determination by FDEP, that the material handling sources in the No. 1 AFI plant are identical or similar to the proposed material handling sources for the AFI plant No. 2 and that no other technology is capable of achieving lower PM/PM_{10} levels than the proposed baghouse technology, the Department believes an emission limit of 0.012 gr/dscf represents BACT for

these sources. This is also applicable to the proposed baghouse-controlling PM emissions from the No. 2 AFI milling, classification, and cooling equipment.

FDEP determined wet scrubber technology to be BACT in Construction Permit No. 0570008-028-AC, issued on June 8, 1999, for modifications to the No. 1 AFI Plant. The permitted PM/PM_{10} emission limits for the existing No. 1 AFI granulation train are 8 pounds per hour (lb/hr) and 35.04 TPY. Again, given this recent BACT determination by FDEP for an identical source, Cargill is proposing equivalent control equipment, capable of attaining the same emission rates, as BACT for the No. 2 AFI granulation system.

The AFI Plant No. 2 dryer is a small source of NO_x, SO_2 and SAM due to the fuel combustion in the dryer. Good combustion practices constitute BACT for NO_x for this source. SO_2 and SAM emissions are controlled by using natural gas as the primary fuel and using low sulfur content fuel as a backup. This constitutes BACT for SO_2 and SAM for this source.

7. No. 5 DAP Plant

The No. 5 DAP plant is currently equipped with three venturi scrubbers and two tailgas scrubbers. The three primary venturi scrubbers are of different but similar design, as are the two tailgas scrubbers. One venturi scrubber controls PM emissions and recovers ammonia from the exhaust gases of the reactor and granulator, the second controls the cooler and equipment vents, and the third venturi scrubber controls PM emissions from the dryer. One tailgas scrubber controls fluoride emissions from the reactor, granulator, and cooler, while the second controls emissions from the dryer. Exhaust gases go to a common stack for the No. 5 DAP plant.

Currently, the scrubber systems are achieving lower emission rates than required by permit No. 0570008-014-AV. As shown in recent stack tests, emissions from the common stack range from 1.3 to 2.9 lb/hr for PM and 0.47 to 3.02 lb/hr for F. These are equivalent to 0.018 to 0.042 lb of PM per ton of P_2O_5 input, and 0.008 to 0.042 lb of F per ton P_2O_5 input.

Cargill's proposed PM/PM_{10} emission rate for the No. 5 DAP plant of 12.8 lb/hr is equivalent to 0.174 lb/ton P_2O_5 input and 0.082 lb/ton of DAP produced. This proposed limit is lower than the previous determinations, based on the actual emissions measured from the No. 5 DAP plant. The proposed limit is justified to provide certainty that the emission limit will be achievable on a continuous basis.

Cargill's proposed fluoride emission rate for the No. 5 DAP plant is 2.9 lb/hr, equivalent to 0.04 lb/ton P_2O_5 input. The proposed BACT limit is equal to the most stringent BACT issued to date for a MAP or DAP plant.

The sources of PM and VE, consisting primarily of DAP dust along with relatively small amounts of ammonium fluoride and other related compounds, are the reactor/granulator, cooler, screens and mills. These emissions are controlled by cyclones, which remove most of the larger particles with the remainder controlled by wet scrubbers. The top-down approach for control of PM/PM10 and VE identified the following BACT options:

1. High-energy (>30 in. w.c.) venturi scrubber or ionizing wet scrubber.
2. Medium-energy (15-30 in.w.c.) venturi scrubber.

Characteristic of this process is that the first stage of scrubbing (acid scrubber) is primarily for ammonia recovery while the primary function of the second stage scrubber is fluoride removal, leaving PM/PM_{10} control with a secondary priority from a design standpoint. Since recovery of ammonia takes place by chemical reaction with the acid scrubbing medium, the required removal can be effected using a medium energy scrubber which also removes up to 85% of the product dust escaping the cyclones. The tail gas scrubber is a low pressure drop device that removes fluorides by absorption. For these reasons, employment of a high energy, high efficiency device for PM/PM_{10} removal has not been a design consideration for these plants.

If maximum PM/PM_{10} removal is considered to be a design parameter, the cost effectiveness of adding high energy scrubbing to the existing system (Option 1) would likely be in the range of $50,000 - $75,000 per incremental ton of PM/PM_{10} removed based on recent analyses for other projects. On a non-incremental basis, however, assuming replacement of the existing acid scrubbers with high energy ones, the cost effectiveness would drop to about $7,000 to $9,000 per ton for PM/PM_{10} removal in the 98+% efficiency range. Due to the high costs of installing new ducts, pumps, fans, and instrumentation for retrofitting an existing system, and the high energy costs, Option 1 is not feasible for this project.

Option 2 is the feasible choice, and the BACT requirement will be satisfied by specifying that the maximum emissions from the cyclonic scrubbers be limited to 0.174 lb PM/ton and 0.04 lb F/ton of P_2O_5 input. Actual emissions from recent stack tests ranged from 0.018 to 0.042 lb PM/ton and 0.008 to 0.042 lb F/ton. Test data indicate that the actual emissions from the cyclonic scrubbers are below the minimum previous BACT determinations of 0.156 lb PM/ton and 0.0417 lb F/ton of P_2O_5 input. Based on the range of previous BACT determinations for PM and F, the proposed limits are within the range for PM and lower than the previous determinations for F.

BACT DETERMINATION BY THE DEPARTMENT:

Based on the information provided by the applicant and other information available to the Department the Department agrees with the emission limit proposed by the applicant and establishes the following emission limits as BACT for this project:

1. Molten Sulfur Handling System

POLLUTANT	EMISSION LIMIT	LIMIT BASIS	CONTROL TECHNOLOGY
VE	10% opacity, except 15% during ship unloading	Permit No. 0570008-014-AV	Wet scrubbers to control emissions from storage tanks while filling and from truck loading station.

2. No. 8 Sulfuric Acid Plant

POLLUTANT	EMISSION LIMIT	LIMIT BASIS	CONTROL TECHNOLOGY
SO_2	393.8 lb/hr 450.0 lb/hr	3.5 lb/ton of 100% H_2SO_4 for 24-hour average; 4 lb/ton of 100% H_2SO_4 for 3-hour average	Double-absorption system
SAM	11.3 lb/hr	0.10 lb/ton of 100% H_2SO_4	Mist eliminator
NO_x	N/A	N/A	Good combustion practices

3. No. 9 Sulfuric Acid Plant

POLLUTANT	EMISSION LIMIT	LIMIT BASIS	CONTROL TECHNOLOGY
SO_2	495.8 lb/hr 566.7 lb/hr	3.5 lb/ton of 100% H_2SO_4 for 24-hour average; 4 lb/ton of 100% H_2SO_4 for 3-hour average	Double-absorption system
SAM	14.2 lb/hr	0.10 lb/ton of 100% H_2SO_4	Mist eliminator
NO_x	N/A	N/A	Good combustion practices

4. Phosphoric Acid Plant

POLLUTANT	EMISSION LIMIT	LIMIT BASIS	CONTROL TECHNOLOGY
F	2.04 lb/hr	0.012 lb F/ton P_2O_5 input	Packed scrubber, (2) Vescor scrubbers, and Dorrco scrubber

5. Enhanced Phosphate Products (EPP) Plant

POLLUTANT	EMISSION LIMIT	LIMIT BASIS	CONTROL TECHNOLOGY
PM/PM_{10}	12 lb/hr for GTSP Mode 8 lb/hr for AP Mode	0.13 lb/ton product 0.08 lb/ton product	RGCV and dryer Venturi scrubbers followed by tailgas scrubbers
F	2.5 lb/hr for GTSP Mode 4.1 lb/hr for AP Mode	0.058 lb/ton P_2O_5 input 0.041 lb/ton P_2O_5 input	Venturi scrubbers followed by tailgas scrubbers
SO_2/SAM	N/A	N/A	Natural gas/low sulfur fuel backup
NO_x	N/A	N/A	Good combustion practices

6. AFI Plants No. 1 and 2

Emission Unit	SO_2/SAM	NO_x	PM/PM_{10}			Fluorides		
	Control Technology	Control Technology	Limit Basis	Emission Limit (lb/hr)	Control Technology	Limit Basis	Emission Limit (lb/hr)	Control Technology
AFI Plant No. 1 Granulation System	Good combustion practices	Good combustion practices	N/A	8	Venturi Scrubber	N/A	N/A	N/A
Defluorination System	N/A	N/A	N/A	N/A	N/A	0.5 lb/batch -hour	2.11	Venturi Scrubber and Packed Cross-flow Scrubber
Milling, Classification, and Cooling Equipment Train No. 1	N/A	N/A	0.012 grains/ dscf	5	Baghouse	N/A	N/A	N/A

AFI Plant No. 2 Granulation System	Good combustion practices	Good combustion practices	N/A	8	Venturi Scrubber	N/A	N/A	N/A
Milling, Classification, and Cooling Equipment Train No. 2	N/A	N/A	0.012 grains/ dscf	5	Baghouse	N/A	N/A	N/A
DE Silo	N/A	N/A	0.012 grains/ dscf	0.053	Baghouse	N/A	N/A	N/A
Limestone Silo	N/A	N/A	0.012 grains/ dscf	0.32	Baghouse	N/A	N/A	N/A
Loadout System	N/A	N/A	0.012 grains/ dscf	2.06	Baghouse	N/A	N/A	N/A

7. No. 5 DAP Plant

POLLUTANT	EMISSION LIMIT	LIMIT BASIS	CONTROL TECHNOLOGY
PM/PM_{10}	12.8 lb/hr	0.17 lb/ton P_2O_5 input	(3) Venturi scrubbers
F	2.9 lb/hr	0.04 lb/ton P_2O_5 input	(2) Tailgas scrubbers
SO_2 /SAM	N/A	N/A	Natural gas/low sulfur fuel backup
NO_x	N/A	N/A	Good combustion practices

COMPLIANCE

Compliance with the emission limits shall be in accordance with the following EPA Reference Methods as contained in 40 CFR 60, Appendix A or as otherwise approved by the Department:

EMISSION UNIT	POLLUTANT	EPA REFERENCE METHOD
Molten Sulfur Handling	PM/PM_{10}	9
Nos. 8 and 9 Sulfuric Acid Plants	SO_2	8
	SAM	8
	VE	9
Phosphoric Acid Plant	FL	13A or 13B
EPP Plant	PM	5
	FL	13A or 13B
	VE	9
AFI Plants No.1 and 2	PM/PM_{10}	5
	FL	13A or 13B
	VE	9
No. 5 DAP Plant	PM/PM_{10}	5
	FL	13A or 13B
	VE	9

DETAILS OF THE ANALYSIS MAY BE OBTAINED BY CONTACTING:

Syed Arif, P.E. II AAL for Syed Arif
New Source Review Section
Department of Environmental Protection
Bureau of Air Regulation
2600 Blair Stone Road, MS 5505
Tallahassee, Florida 32399-2400

Recommended By:

for A A Linero
C.H. Fancy, P.E., Chief
Bureau of Air Regulation

11/21/01
Date:

Approved By:

Howard L. Rhodes
Howard L. Rhodes, Director
Division of Air Resources Management

11/21/01
Date:

G.1 The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "Permit Conditions" and are binding and enforceable pursuant to sections 403.161, 403.727, or 403.859 through 403.861, F.S. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.

G.2 This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.

G.3 As provided in Subsections 403.087(6) and 403.722(5) , F.S. the issuance of this permit does not convey any vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit is not a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.

G.4 This permit conveys no title to land or water, does not constitute State recognition or acknowledgement of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.

G.5 This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.

G.6 The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.

G.7 The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at a reasonable time, access to the premises, where the permitted activity is located or conducted to:

a. Have access to and copy any records that must be kept under the conditions of the permit;
b. Inspect the facility, equipment, practices, or operations regulated or required under this permit; and
c. Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

Reasonable time may depend on the nature of the concern being investigated.

G.8 If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:

a. a description of and cause of non-compliance; and
b. the period of noncompliance, including dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance.

The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.

G.9 In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is prescribed by sections 403.73 and 403.111, F.S. Such evidence shall only be used to the extent it is consistent with the Florida Rules of civil Procedure and appropriate evidentiary rules.

G.10 The permittee agrees to comply with changes in Department rules and F.S. after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida statutes or Department rules.

G.11 This permit is transferable only upon Department approval in accordance with Rules 62-4.120, as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.

G.12 This permit or a copy thereof shall be kept at the work site of the permitted activity.

G.13 This permit also constitutes:

(X) Determination of Best Available Control Technology (BACT)
(X) Determination of Prevention of Significant Deterioration (PSD)
(X) Compliance with New Source Performance Standards (NSPS)

G.14 The permittee shall comply with the following:

a. Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.
b. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.
c. Records of monitoring information shall include:
   - the date, exact place, and time of sampling or measurements;
   - the person responsible for performing the sampling or measurements;

- the dates analyses were performed;
- the person responsible for performing the analyses;
- the analytical techniques or methods used; and
- the results of such analyses.

G.15 When requested by the Department, the permittee shall within a reasonable time furnish any information required by law, which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

Memorandum

Florida Department of
Environmental Protection

TO: Howard L. Rhodes

THRU: Clair Fancy

THRU: Al Linero

FROM Syed Arif

DATE: November 20, 2001

SUBJECT: Cargill Fertilizer, Inc.
DEP File No. 0570008-036-AC; PSD-FL-315

Attached for your approval and signature is the final construction permit to increase production at the Riverview facility in Hillsborough County.

The proposed changes will include increased molten sulfur through the molten sulfur handling system, additional digestion capacity associated with the Dorrco Reactor at the Phosphoric Acid plant, modification of the Granular Triple Super Phosphate plant, modification of the Animal Feed Ingredient (AFI) plant, construction of a second AFI granulation train, and modification of the No. 5 Diammonium Phosphate plant. The applicant is also requesting removal of the existing allowable production rate cap for the Nos. 8 and 9 Sulfuric Acid plants, to allow these plants to simultaneously operate up to their maximum capacities, with a reduction in allowable emissions.

The project is subject to Prevention of Significant Deterioration (PSD) review for F, SO_2, NO_x, SAM, PM, and PM_{10} in accordance with 62-212.400, F.A.C. A Best Available Control Technology (BACT) determination is part of the review required by Rules 62-212.400 and 62-296, F.A.C.

Sulfur dioxide and sulfuric acid mist emissions from the sulfuric acid plants will be controlled by the double absorption process and mist eliminators, respectively. Sulfuric acid mist emissions of 0.10 lb/ton established for these plants are the most stringent to date for any plant in Florida. Fluoride emissions from the phosphoric acid trains will be controlled by the use of scrubbers using process pond water. An air quality impact analysis was required for sulfur dioxide and nitrogen oxides.

Comments were submitted by the applicant, Hillsborough County and the EPA during the public notice period. All these comments were considered in the final determination.

November 20 is Day 74 for the project.

I recommend your approval and signature.

AAL/sa

Attachments

SENDER: *COMPLETE THIS SECTION*

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Mr. E. O. Morris
Cargill Fertilizer, Inc.
8813 U.S. Highway 41 South
Riverview, FL 33569

COMPLETE THIS SECTION ON DELIVERY

A. Received by *(Please Print Clearly)* B. Date of Delivery 11/2/01

C. Signature
X
☐ Agent
☐ Addressee

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number *(Copy from service label)*
7000 2870 0000 7028 2928

PS Form 3811, July 1999 Domestic Return Receipt 102595-99-M-1789

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CERTIFIED MAIL RECEIPT
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7000 2870 0000 7028 2928

Sent To
E. O. Morris
Street, Apt. No.; or PO Box No.
8813 US Hwy. 41 South
City, State, ZIP+ 4
Riverview, FL 33569

PS Form 3800, May 2000 See Reverse for Instructions