



Memorandum

Florida Department of Environmental Protection

TO: Michael G. Cooke

THRU: Trina Vielhauer 
Al Linero 

FROM: Syed Arif SA 3115

DATE: March 15, 2004

SUBJECT: Cargill Fertilizer, Inc.
DEP File No. 0570008-044-AC; PSD-FL-336

Attached for your approval and signature is the final construction permit to modify the existing No. 6 Granulation Plant (formerly EPP Plant). The No. 6 Granulation Plant is being modified to increase the ammoniated phosphates (AP) production rate, replace the reactor, dryer, and cooler, modify the control equipment configuration, and add a new stack that will be used along with the existing common plant stack. As a result of these changes, significant emission increases will occur for PM₁₀ and fluorides (F).

The project is therefore subject to the Prevention of Significant Deterioration (PSD) review for F and PM₁₀ in accordance with 62-212.400, F.A.C. A Best Available Control Technology (BACT) determination was conducted for these pollutants as required by Rules 62-212.400 and 62-296, F.A.C.

The BACT proposed by the applicant for PM/PM₁₀ and F were three medium-energy venturi scrubbers using scrubbing solution followed by an ammonia vaporizer and two tailgas scrubbers. The BACT limit established by the Department for F of 0.035 lb/ton of P₂O₅ input is the most stringent limit established to date for a MAP/DAP/GTSP plant.

The Public Notice was published on February 14, 2004 in the Tampa Tribune. No comments were received from the applicant, public, EPA Region IV or National Park Service.

March 15 is Day 15 for the project. The project is being expedited as requested by the applicant. Cargill has notified us that the turnaround for this plant started over the weekend.

I recommend your approval and signature.

MGC/sa

Attachments

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
NOTICE OF FINAL PERMIT

In the Matter of an
Application for Permit

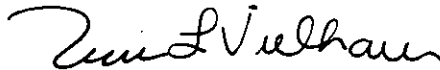
Mr. E. O. Morris
Cargill Fertilizer, Inc.
8813 U.S. Highway 41 South
Riverview, Florida 33569

DEP File No. 0570008-044-AC
PSD-FL-336

Enclosed is the FINAL Permit Number PSD-FL-336 for increasing the ammoniated phosphates production rate, replacing the reactor and cooler, modifying the control equipment configuration, and adding a new stack that will be used along with the existing common plant stack 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.



Trina L. Vielhauer, Chief
Bureau of Air Regulation

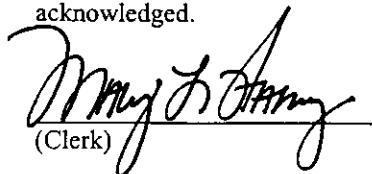
CERTIFICATE OF SERVICE

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 3/16/04 to the person(s) listed:

E. O. Morris, Cargill Fertilizer, Inc.*
Gregg Worley, EPA
John Bunyak, NPS
Jerry Kissel, 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.


(Clerk)

3/16/04
(Date)

FINAL DETERMINATION

Cargill Fertilizer, Incorporated

Permit No. 0570008-044-AC, PSD-FL-336

Riverview Facility

An Intent to Issue an air construction permit to Cargill Fertilizer, Inc. to modify the existing Enhanced Phosphate Products (EPP) plant at its phosphate fertilizer manufacturing facility in Hillsborough County, was distributed on February 13, 2004. The Notice of Intent was published in the Tampa Tribune on February 14, 2004. Copies of the draft construction permit were available for public inspection at the Department offices in Tampa and Tallahassee.

The Department received no comments from the public, the applicant, the EPA Region 4 office or the Fish and Wildlife Service.

The final action of the Department is to issue the permit as proposed.



Jeb Bush
Governor

Department of Environmental Protection

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

David B. Struhs
Secretary

PERMITTEE:

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

Authorized Representative:

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

File No.	0570008-044-AC
Permit No.	PSD-FL-336
SIC No.	2874
Project:	No. 6 Granulation Plant Modification
Expires:	December 1, 2006

PROJECT AND LOCATION:

Permit for increased ammoniated phosphates (AP) production rate and modification of the Enhanced Phosphates Products (EPP) Plant (to be renamed the No. 6 Granulation 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

Michael G. Cooke, Director
Division of Air Resource
Management

"More Protection, Less Process"

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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 the AP production rate and modify the existing Enhanced Phosphates Products (EPP) Plant (to be renamed the No. 6 Granulation Plant). As a result of these changes, increases in the actual particulate matter (PM), PM with an aerodynamic diameter of 10 microns or less (PM₁₀), and fluoride (F) 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).

The Cargill Riverview Facility is also classified as a “Major Source” per 40 CFR 63.2, Definitions (adopted and incorporated by reference by the Department at Paragraph 62-204.800(11)(d)) because it consists of a group of stationary sources located within a contiguous area and under common control that emit or have the potential to emit considering controls, in the aggregate, 10 tons per year or more of any hazardous air pollutant or 25 tons per year or more of any combination of hazardous air pollutants.

The No. 6 Granulation Plant is subject to federal NSPS under 40 CFR 60, Subpart V and W. Subpart V regulates F emissions from DAP plants. Subpart W regulates F emissions from GTSP plants. The No. 6 Granulation Plant is also subject to the emission limitations of Rule 62-296.403(1)(d)(2) F.A.C. and Rule 62-296.403(1)(f) pertaining to fluoride emissions from phosphate processing plants. The MACT requirements of 40 CFR 63, Subpart BB applies to the No. 6 Granulation Plant. Subpart BB regulates F emissions from Phosphate Fertilizer Plants.

PERMIT SCHEDULE:

- 10-17-2003: Original Application Received
- 02-05-2004: Application Complete
- 02-13-2004: Mailed Intent to Issue Permit
- 02-14-2004: Notice published in the Tampa Tribune

SECTION I – FACILITY INFORMATION

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 October 17, 2003
- Department's incompleteness letters dated November 5 and November 14, 2003
- Applicant's submittal received February 5, 2004
- Technical Evaluation and Preliminary Determination dated February 11, 2004
- Best Available Control Technology Determination (issued concurrently with permit)

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, 2006 [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 must be submitted ninety days before expiration of this construction permit, but no later than 180 days after commencing operation 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)]

SECTION II – ADMINISTRATIVE REQUIREMENTS

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.
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.]

**AIR CONSTRUCTION PERMIT PSD-FL-336 (0570008-044-AC)
SECTION III - EMISSION UNIT(S) SPECIFIC CONDITIONS**

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

EMISSION UNIT NO.	EMISSION UNIT DESCRIPTION
007	No. 6 Granulation Plant (formerly EPP Plant)

1. a. The process rate for the No. 6 Granulation Plant shall not exceed 1,016 tons per day of P₂O₅ input or 2,208 tons per day of GTSP (granular triple super phosphate) production. **[Rule 62-210.200, F.A.C.]**
 b. The process rate for the No. 6 Granulation Plant shall not exceed 2,060 tons per day of P₂O₅ input or 4,478 tons per day of AP (ammoniated phosphates) production. **[Rule 62-210.200, F.A.C.]**
2. The heat input rate to the rotary dryer shall not exceed 80 MMBtu/hr (daily average). **[Rule 62-210.200, F.A.C.]**
3. The No. 6 Granulation 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 No. 6 Granulation Plant may operate up to 8,760 hours per year. **[Rule 62-210.200, F.A.C.]**
5. Particulate emissions from the No. 6 Granulation Plant shall not exceed the following **[Rule 62-212.400, F.A.C.]**:

Production Mode	lb/ton P ₂ O ₅ input	lb/hr	TPY
GTSP	0.15	6.35	27.81
AP	0.15	12.88	56.39

6. Fluoride emissions from the No. 6 Granulation Plant shall not exceed the following **[Rule 62-212.400, F.A.C.]**:

Production Mode	lb/ton P ₂ O ₅ input	lb/hr	TPY
GTSP	0.035	1.48	6.49
AP	0.035	3.00	13.16

AIR CONSTRUCTION PERMIT PSD-FL-336 (0570008-044-AC)
SECTION III - EMISSION UNIT(S) SPECIFIC CONDITIONS

7. Visible emissions from the No. 6 Granulation 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.]**
10. Before this construction permit expires, and annually, the subject emissions unit 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.]**
11. 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.]**
12. The compliance test procedures shall be in accordance with EPA Reference Methods 5, 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.]**
13. 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.]**
14. 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.]**
15. 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

AIR CONSTRUCTION PERMIT PSD-FL-336 (0570008-044-AC)
SECTION III - EMISSION UNIT(S) SPECIFIC CONDITIONS

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.]
16. Unless otherwise indicated, the modification/construction and operation of the No. 6 Granulation Plant shall be in accordance with the capacities and specifications stated in the application. [Rule 62-210.300, F.A.C.]

APPENDIX BD
BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION (BACT)

Cargill Fertilizer, Inc.
No. 6 Granulation Plant Modification
PSD-FL-336/0570008-044-AC
Riverview, Hillsborough County

Cargill Fertilizer, Inc. has applied to modify an existing emission unit at its phosphate fertilizer manufacturing facility located in Riverview, Florida. The proposed changes will include increased AP production rate and modification of the EPP Plant (to be renamed the No. 6 Granulation Plant). As a result of this project, increases in emissions of fluoride (F), particulate matter (PM), and particulate matter less than or equal to 10 micrometers (PM₁₀) from the proposed modifications may occur.

The increases in emissions of F and PM₁₀ 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 and PM₁₀ 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 October 17, 2003. BACT application was complete on February 5, 2004.

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.

APPENDIX BD
BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION (BACT)

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, PM₁₀). Controlled generally by wet scrubbing or filtration.
- **Combustion Products** (SO₂, NO_x). NO_x controlled generally by good combustion of clean fuels. SO₂ 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, SO₂, H₂SO₄, 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 and PM₁₀ 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 and PM₁₀.

BACT EMISSION LIMITS PROPOSED BY APPLICANT:

No. 6 Granulation Plant

POLLUTANT	EMISSION LIMIT	LIMIT BASIS	CONTROL TECHNOLOGY
PM ₁₀	6.4 lb/hr for GTSP Mode 12.9 lb/hr for AP Mode	0.15 lb/ton P ₂ O ₅ input	(3) Medium-energy Venturi scrubbers using scrubbing solution followed by an ammonia vaporizer and (2) tailgas scrubbers
F	1.69 lb/hr for GTSP Mode 3.43 lb/hr for AP Mode	0.04 lb/ton P ₂ O ₅ input	(3) Medium-energy Venturi scrubbers using scrubbing solution followed by an ammonia vaporizer and (2) tailgas scrubbers

BACT DETERMINATION BY THE DEPARTMENT:

PARTICULATE MATTER (PM/PM₁₀)

The top-down approach for control of PM/PM₁₀ identified the following BACT options:

1. High-energy (> 30 inches w.c.) venturi scrubber.
2. Medium-energy (15 to 30 inches w.c.) venturi scrubber.

APPENDIX BD
BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION (BACT)

A previous BACT determination for a DAP plant (IMC-Agrico-New Wales; PSD-FL-241) addressed alternatives for PM/PM₁₀ control. The alternatives addressed consisted of a high-energy (>30 inches w.c.) venturi scrubber and a medium energy (15 to 30 inches 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 costs effectiveness ranging from \$50,000 to \$75,000 per incremental ton of PM/PM₁₀ removed. As a result, the high-energy venturi scrubber option was found to be infeasible, and the existing medium-energy venturi scrubbers were selected as BACT. This cost impact would also exist for high-energy venturi scrubbers employed at the No. 6 Granulation Plant as described below, and is considered economically infeasible.

To evaluate the incremental cost effectiveness of high-energy venturi scrubbers applied to the No. 6 Granulation Plant, cost estimates were developed for medium- and high-energy venturi scrubbers. Vendor quotes and Cargill Riverview experience were utilized in developing the economic analysis. The capital cost analysis includes the costs associated with complete systems, including the venturi scrubber, mist eliminator, fan and motor, recycle pump, and installation costs. Operational costs include labor for the operator and supervisor, maintenance, and the energy requirement associated with the operation of the scrubber fan. There is a considerable difference in the energy requirements between the medium-energy and high-energy scrubbers due to the operation of the fan and motor. For this analysis, the medium-energy scrubber fans require 199 kW to 299 kW of energy, while the high-energy scrubbers require 543 kW to 815 kW of energy.

Baseline PM emissions were specified as 52.6 TPY, which is based on the proposed maximum emissions. The maximum PM emissions with the use of the high-energy venturi scrubbers were specified as 10 TPY. This is based on uncontrolled emissions that were calculated based on the maximum production rate and an uncontrolled emission factor from AP-42 and a control efficiency of 99.5-percent. Capital recovery costs were based on 7-percent interest and a 20-year equipment life.

The annualized cost for the proposed project was estimated and was presented in Table 5-4 of the application. Since Cargill is proposing to add two new medium-energy venturi scrubbers, a dryer venturi, and a cooler venturi scrubber, and utilize the existing RGV venturi scrubber, the cost estimate included capital costs for two new medium-energy venturi scrubbers and operating costs for three medium-energy venturi scrubbers. The total annualized cost for the proposed project is \$683,900.

The annualized cost of utilizing high-energy venturi scrubbers at the No. 6 Granulation Plant was estimated and was presented in Table 5-5 of the application. Since the existing venturi scrubbers are medium-energy, this cost analysis included the installation of three new high-energy venturi scrubbers and all associated operating costs. The incremental annualized cost of high-energy venturi scrubbers applied to the No. 6 Granulation Plant was estimated by taking the difference between the annualized cost of medium-energy venturi scrubbers and the annualized cost of high-energy scrubbers applied to the No. 6 Granulation Plant. The incremental cost effectiveness was estimated from the incremental annualized cost and the incremental reduction in PM emissions that would result from installing high-energy venturi scrubbers. Based on uncontrolled emissions of PM of 2,029 TPY, and assuming 99.5-percent control efficiency with the use of high-energy venturi scrubbers, the maximum PM emissions are 10.1 TPY, and the incremental PM removed is 42.5 TPY. The resulting incremental cost effectiveness is \$31,366 per ton of PM removed. This

APPENDIX BD
BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION (BACT)

cost is considered to be unreasonable and infeasible for the proposed project. As a result, high-energy venturi scrubbers for PM/PM₁₀ control were not considered further.

The BACT proposed by the applicant for PM/PM₁₀ is based on the following:

- One existing medium-energy venturi scrubber using scrubber solution (weak phosphoric acid) followed by a new ammonia vaporizer for the reactor, granulator, and equipment vents (RGV),
- One new medium-energy venturi scrubber using scrubber solution (weak phosphoric acid) followed by an existing packed-bed tailgas scrubber using pond water for the dryer, and
- One new medium-energy venturi scrubber using scrubber solution (weak phosphoric acid) followed by a new packed-bed tailgas scrubber using pond water for the cooler.

From the applicant's review of previous BACT determinations, it is evident that PM/PM₁₀ BACT determinations for GTSP, MAP, and DAP manufacturing facilities have been based on wet scrubber technology. BACT determinations have been in the range of 0.15 to 0.41 lb/ton P₂O₅ for PM/PM₁₀ emissions. The most recent determinations are in the range of 0.15 to 0.18 lb/ton P₂O₅.

The proposed maximum PM/PM₁₀ emission rate for the No. 6 Granulation Plant is 0.15 lb/ton P₂O₅, equivalent to 12.88 lb/hr and 56.39 TPY when producing AP and 6.35 lb/hr and 27.81 TPY when producing GTSP.

According to the applicant's test data, proposed limit is justified to provide certainty that the proposed emission level will be achievable on a continuous basis. As shown by stack test data from the last three years, actual PM emissions from the No. 6 Granulation Plant ranged from 0.199 to 0.215 lb/ton P₂O₅. To be able to meet the lower PM limit of 0.15 lb/ton P₂O₅, the applicant is installing new pollution control equipment as part of the proposed project. The applicant is also proposing to increase the AP process rate.

Consequently, the Department proposes 0.15 lb PM/ton P₂O₅ input as the new BACT emission limit for the No. 6 Granulation Plant.

FLUORIDES

The top-down approach for control of F identified the following BACT options:

1. Packed scrubber using once-through fresh water.
2. Packed scrubber using neutralized water from a dedicated pond (fresh water makeup).
3. Packed scrubber using process cooling pond water.

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 BACT proposed by the applicant for F is based on the following:

APPENDIX BD
BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION (BACT)

- One existing medium-energy venturi scrubber using scrubber solution (weak phosphoric acid) followed by a new ammonia vaporizer for the reactor, granulator, and equipment vents (RGV),
- One existing medium-energy venturi scrubber using scrubber solution (weak phosphoric acid) followed by an existing packed-bed tailgas scrubber using pond water for the dryer, and
- One new medium-energy venturi scrubber using scrubber solution (weak phosphoric acid) followed by a new packed-bed tailgas scrubber using pond water for the cooler.

From the applicant's review of previous BACT determinations, it is evident that F BACT determinations for GTSP, MAP, and DAP manufacturing facilities have all been based on wet scrubber technology. With one exception, BACT determinations have been in the range of 0.037 to 0.06 lb/ton P₂O₅ of F emissions. The most recent determinations are in the range of 0.037 to 0.041 lb/ton P₂O₅. The lowest emission limit of 0.019 lb/ton P₂O₅ was for a prilled MAP plant, which is a different process compared to Cargill's granular MAP/DAP plants. The next lowest emission limit from previous BACT determinations was 0.037 lb/ton P₂O₅.

The applicant's proposed maximum F emission rate for the No. 6 Granulation Plant is 0.04 lb/ton P₂O₅, equivalent to 3.43 lb/hr and 15.04 TPY when producing AP and 1.69 lb/hr and 7.42 TPY when producing GTSP.

According to the applicant's test data, the F emissions test data for the No. 6 Granulation Plant have ranged from 0.014 to 0.041 lb/ton P₂O₅. Test data from Cargill's Green Bay facility North MAP/DAP Plant, which is configured similarly to the modified No. 6 Granulation Plant, have ranged from 0.006 to 0.036 lb/ton P₂O₅. To meet the requested F limit, the applicant is proposing to add pollution control equipment at the No. 6 Granulation Plant. The applicant is also proposing to increase the AP process rate. Based on the F emission levels achieved at the similar Green Bay facility North MAP/DAP Plant, the Department proposes 0.035 lb F/ton P₂O₅ input as the new BACT emission limit for the No. 6 Granulation Plant. The applicant accepted the lower BACT limit as proposed by the Department. **To date, this is the most stringent fluoride BACT limit established for MAP/DAP/GTSP Plant.**

The above BACT determinations are summarized in the following table:

No. 6 Granulation Plant

POLLUTANT	EMISSION LIMIT	LIMIT BASIS	CONTROL TECHNOLOGY
PM/PM ₁₀	6.4 lb/hr for GTSP Mode 12.9 lb/hr for AP Mode	0.15 lb/ton P ₂ O ₅ input	(3) Medium-energy Venturi scrubbers using scrubbing solution followed by an ammonia vaporizer and (2) tailgas scrubbers
F	1.5 lb/hr for GTSP Mode 3.0 lb/hr for AP Mode	0.035 lb/ton P ₂ O ₅ input	(3) Medium-energy Venturi scrubbers using scrubbing solution followed by an ammonia vaporizer and (2) tailgas scrubbers

APPENDIX BD
BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION (BACT)

COMPLIANCE PROCEDURES

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
No. 6 Granulation Plant	PM	5
	FL	13A or 13B
	VE	9

DETAILS OF THE ANALYSIS MAY BE OBTAINED BY CONTACTING:

Syed Arif, Permit Engineer
Department of Environmental Protection
Bureau of Air Regulation
2600 Blair Stone Road, MS 5505
Tallahassee, Florida 32399-2400

Recommended By:

Approved By:

Trina L. Vielhauer
Trina L. Vielhauer, Chief
Bureau of Air Regulation

Michael G. Cooke
Michael G. Cooke, Director
Division of Air Resource Management

3/15/04
Date:

3/15/04
Date:

APPENDIX GC
GENERAL PERMIT CONDITIONS [F.A.C. 62-4-160]

- 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.

APPENDIX GC
GENERAL PERMIT CONDITIONS [F.A.C. 62-4-160]

- 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;

APPENDIX GC
GENERAL PERMIT CONDITIONS [F.A.C. 62-4-160]

- 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.

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY	
<ul style="list-style-type: none"> 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. 	A. Signature <i>Betty Rees</i> <input type="checkbox"/> Agent <input type="checkbox"/> Addressee	
	B. Received by (Printed Name) <i>Betty Rees</i>	C. Date of Delivery
1. Article Addressed to: Mr. E. O. Morris Cargill Fertilizer, Inc. 8813 U.S. Highway 41 South Riverview, Florida 33569	D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No <i>3/18</i>	
	3. Service Type <input checked="" type="checkbox"/> Certified Mail <input type="checkbox"/> Express Mail <input type="checkbox"/> Registered <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Insured Mail <input type="checkbox"/> C.O.D.	
	4. Restricted Delivery? (Extra Fee) <input type="checkbox"/> Yes	
2. Article Number (Transfer from service label)	7000 1670 0013 3109 9540	
PS Form 3811, August 2001 Domestic Return Receipt 102595-02-M-1540		

U.S. Postal Service
CERTIFIED MAIL RECEIPT
 (Domestic Mail Only; No Insurance Coverage Provided)

7000 1670 0013 3109 9540

Postage	\$	Postmark Here
Certified Fee		
Return Receipt Fee (Endorsement Required)		
Restricted Delivery Fee (Endorsement Required)		
Total Postage & Fees	\$	

Sent to: *Mr. E. O. Morris*
 Street, Apt. No., or PO Box No. *8813 U.S. Hwy 41 South*
 State, ZIP+4 *Riverview, FL 33569*

PS Form 3800, May 2000 See Reverse for Instructions