Department of Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

June 12, 1995

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. David B. Jellerson, P.E.
Environmental Superintendent
Cargill Fertilizer, Inc.
P.O. Box 9002
Bartow, Florida 33830

Dear Mr. Jellerson:

Attached is one copy of the Technical Evaluation and Preliminary Determination and proposed permit for Cargill Fertilizer to increase the production rate of the No. 4 and No. 5 Phosphoric Acid Plants and to install a new phosphoric acid filter at the existing facility in Bartow, Polk County, Florida. Also included is the Notice of Intent to Issue for you to publish as indicated.

Please submit any written comments to be considered concerning the Department's proposed action to Mr. A. A. Linero at the above address. If there are any questions that can be handled by phone, please call Mr. John Reynolds at 904-488-1344.

Sincerely,

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

CHF/jr/t

Attachments

CC: W. Thomas, SWD
L. Novak, Polk Co.
J. Harper, EPA
J. Bunyak, NPS
D. Buff, KBN

Is your RETURN ADDRESS completed on the reverse side?

SENDER:
- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):
1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Mr. David B. Jellerson, P.E.
Environmental Superintendent
Cargill Fertilizer, Inc.
P. O. Box 9002
Bartow, FL 33830

4a. Article Number
Z 311 902 911

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery
6-16-95

5. Signature (Addressee)

8. Addressee's Address (Only if requested and fee is paid)

6. Signature (Agent)

PS Form **3811**, December 1991 ☆U.S. GPO: 1992—323-402 **DOMESTIC RETURN RECEIPT**

Thank you for using Return Receipt Service.

Z 311 902 911

Receipt for Certified Mail
No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

UNITED STATES POSTAL SERVICE

PS Form **3800**, March 1993

Sent to	Mr. David Jellerson, P.E.
Street and No.	P.O. Box 9002 Cargill Fertilizer
P.O., State and ZIP Code	Bartow, FL 33830
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date	Mailed: 6-12-95 Permit: AC53-262532 PSD-FL-224

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

CERTIFIED MAIL

In the Matter of an
Application for Permit by:

DEP File No. PSD-FL-224
AC 53-262532
Polk County

Mr. David B. Jellerson, P.E.
Environmental Superintendent
Cargill Fertilizer, Inc.
P. O. Box 9002
Bartow, Florida 33830
_____/

INTENT TO ISSUE

The Department of Environmental Protection (Department) gives notice of its intent to issue an air construction permit (copy attached) to the applicant's facility as detailed in the application/request specified, above, for the reasons stated in the attached Technical Evaluation and Preliminary Determination.

The applicant, Cargill Fertilizer, Inc., applied on March 15, 1995, to the Department for a permit to increase the production of their No. 4 and No. 5 phosphoric acid plants from 140 to 170 tons P2O5 per hour and to install a new phosphoric acid filter. The facility is located in Polk County.

The Department has permitting jurisdiction under the provisions of Chapter 403, Florida Statutes (F.S.), and Chapters 62-212 and 62-4, Florida Administrative Code (F.A.C.). The project is not exempt from permitting procedures. The Department has determined that a permit amendment is required for the proposed work.

Pursuant to Section 403.815, F.S., and Rule 62-103.150, F.A.C., you (the applicant) are required to publish at your own expense the enclosed Notice of Intent to Issue Permit Amendment. The notice shall be published one time only within 30 days in the legal ad section of a newspaper of general circulation in the area affected. For the purpose of this rule, "publication in a newspaper of general circulation in the area affected" means publication in a newspaper meeting the requirements of Sections 50.011 and 50.031, F.S., in the county where the activity is to take place. The applicant shall provide proof of publication to the Department's Bureau of Air Regulation, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, within seven days of publication. Failure to publish the notice and provide proof of publication within the allotted time may result in the denial of the permit amendment.

The Department will issue the permit amendment with the attached conditions unless a petition for an administrative proceeding (hearing) is filed pursuant to the provisions of Section 120.57, F.S.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, F.S. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. Petitions filed by the permit applicant and the parties listed below must be filed within 14 days of receipt of this intent. Petitions filed by other persons must be filed within 14 days of publication of the public notice or within 14 days of their receipt of this intent, whichever first occurs. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, F.S.

The Petition shall contain the following information;

(a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed;
(b) A statement of how and when each petitioner received notice of the Department's action or proposed action;
(c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;
(d) A statement of the material facts disputed by Petitioner, if any;
(e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action;
(f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and,
(g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this intent. Persons whose substantial interests will be affected by any decision of the Department with regard to the application/ request have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of receipt of this intent in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to

request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

C. H. Fancy, P.E., Chief
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399
904-488-1344

CERTIFICATE OF SERVICE

The undersigned duly designated deputy clerk hereby certifies that this INTENT TO ISSUE PERMIT AMENDMENT all copies were mailed by certified mail before the close of business on June 12, 1995 to the listed persons.

Clerk Stamp

FILING AND ACKNOWLEDGMENT
FILED, on this date, pursuant to §120.52(11), Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

Charlotte J. Hayes
Clerk

6/12/95
Date

Copies furnished to:
B. Thomas, SWD
L. Novak, Polk Co.
J. Harper, EPA
J. Bunyak, NPS
D. Buff, KBN

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

NOTICE OF INTENT TO ISSUE PERMIT

PSD-FL-224

The Department of Environmental Protection (Department) gives notice of its intent to issue a permit to Cargill Fertilizer, Inc., 3200 Highway 60 West, Bartow, Florida 33830. This company operates a phosphate fertilizer manufacturing facility at that address. The permit will allow the phosphoric acid production rate of the No. 4 and No. 5 plants to be increased from a total of 140 to 170 tons of P2O5 per hour with the installation of new filtering capacity. A determination of Best Available Control Technology (BACT) was required since the proposed project is subject to Prevention of Significant Deterioration (PSD) regulations. Modeling was done but was not used since there will be no increase in allowable emissions. The Department is issuing this Intent to Issue for the reasons stated in the Technical Evaluation and Preliminary Determination.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, Florida Statutes (F.S.). The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, within 14 days of publication of this notice. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, F.S.

The Petition shall contain the following information; (a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed; (b) A statement of how and when each petitioner received notice of the Department's action or proposed action; (c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action; (d) A statement of the material facts disputed by Petitioner, if any; (e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action; (f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and, (g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this Notice. Persons whose substantial interests will be affected by any decision of the Department with regard to the application/ request have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of publication of this notice in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, Florida Administrative Code.

The application/request is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:

Department of Environmental Protection
Bureau of Air Regulation
111 S. Magnolia Drive, Suite 4
Tallahassee, Florida 32301

Department of Environmental Protection
Southwest District
8407 Laurel Fair Circle
Tampa, Florida 33619

Any person may send written comments on the proposed action to Mr. Al Linero at the Department's Tallahassee address. All comments received within 30 days of the publication of this notice will be considered in the Department's final determination.

Further, a public hearing can be requested by any person(s). Such requests must be submitted within 30 days of this notice.

Technical Evaluation
and
Preliminary Determination

Cargill Fertilizer, Inc.
Installation of New Filter With Integration of
Nos. 4 & 5 Phosphoric Acid Plants
Polk County
Bartow, Florida

Permit Number
PSD-FL-224
AC 53-262532

Florida Department of Environmental Protection
Division of Air Resources Management
Bureau of Air Regulation

June 12, 1995

I. Application Information

A. Applicant

Mr. David B. Jellerson, P.E.
Environmental Superintendent
Cargill Fertilizer, Inc.
P.O. Box 9002
Bartow, Florida 33830

B. Request

The Department received a complete application on March 15, 1995, to construct a new phosphoric acid filter and scrubber to be integrated with the Bartow Phosphoric Acid Plants Nos. 4 and 5 in order to form one large plant for which the combined production will be increased from 140 to 170 tons P2O5 per hour (TPH).

C. Classification

The applicant's facility (SIC 2874) is located at 3200 Highway 60 West, Bartow, Polk County, Florida. Latitude and longitude are 27/54/22 and 81/54/59 respectively. UTM coordinates of the site are: Zone 17, 409.9 km E and 3,086.8 km N.

II. Project Description/Emissions

The applicant proposes to increase phosphoric acid production by forming one large plant from two smaller existing ones (Plants 4 and 5). Total production from the reconfigured plant will go up by 21% from the currently permitted 140 TPH to 170 TPH. To accomplish this, additional phosphoric acid filtering and fluoride scrubbing capacity will be required. A new phosphoric acid filter will serve the No. 4 reactor while the existing No. 4 and No. 5 filters will serve the No. 5 reactor. Production of the respective sections of the reconfigured plant will be 58 TPH from No. 4 and 112 TPH from No. 5. Also installed will be ductwork to vent previously uncontrolled tanks to the new scrubber so that compliance with the federal new source performance standards, 40 CFR 60, Subpart T, will be assured.

Emissions of primary concern are gaseous fluorides (SiF4 and HF) from the reactors, filters, and tanks. Actual emissions of SiF4 and HF will increase as a result of this project, although the extent of the actual increase cannot be predicted with any great degree of accuracy. A comparison of prior actual fluoride emissions at lower input rates with current and future allowables at a higher input rate is shown below. The rationale for the future allowable emissions is discussed in detail in the BACT determination.

FLUORIDE EMISSIONS

Emission Unit	'92-'93 Actuals lb/hr	'92-'93 Actuals TPY	Current Allowables lb/hr	Current Allowables TPY	Future Allowables lb/hr	Future Allowables TPY
No. 4 PA Plant	0.17	0.56	0.82	3.57	0.53	2.32
No. 5 PA Plant	0.42	1.61	1.56	6.85	1.06	4.64
New Filter	-	-	-	-	0.70	3.05
Clarifiers/Tanks	-	-	-	-	(inc.w/filter)	
Totals	0.59	2.17	2.38	10.42	2.29	10.12

III. Rule Applicability

The construction permit application is subject to review under Chapter 403, Florida Statutes (F.S.), and Chapters 62-209 through 62-297 and 62-4, F.A.C. The facility is located in an area designated as attainment for all criteria pollutants (Rule 62-275.400, F.A.C.). The proposed project is subject to the preconstruction review requirements of Rule 62-212.400, F.A.C., Prevention of Significant Deterioration (PSD) since the proposed increase in fluoride emissions exceeds the significant level of 3.0 TPY set forth in Table 212.400-2 of Chapter 62-212, F.A.C. The federal new source performance standards under 40 CFR 60, Subpart T, apply except that a top down BACT analysis is required which supersedes the new source standards.

IV. Air Quality Analysis

Modeling was conducted using the ISCST2 model contained in the EPA's User's Network for Applied Modeling of Air Pollution (UNAMAP), Version 6. The maximum predicted air quality impact in the vicinity of the applicant's facility due to the project is 0.99 ug F/m^3 for the 24-hour averaging time compared to the Florida Air Reference Concentration No Threat Level of 6.0 ug F/m^3.

V. Conclusion

Based on the information provided by Cargill Fertilizer, Inc., the Department has reasonable assurance that the proposed project, as proposed herein, will not cause or contribute to a violation of an ambient air quality standard, PSD increment, or any other technical provisions of Chapters 62-209 through 62-297 of the Florida Administrative Code.

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Department of Environmental Protection

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

Lawton Chiles
Governor

Virginia B. Wetherell
Secretary

PERMITTEE:
Cargill Fertilizer, Inc.
3200 Highway 60 West
Bartow, FL 33830

Permit Number: AC 53-262532
PSD-FL-224
Expiration Date: Dec. 31, 1997
County: Polk
Latitude/Longitude: 27°54'22"N
81°54'59"W
Project: Production Increase to 170 TPH w/New Filter

This permit is issued under the provisions of Chapter 403, Florida Statutes (F.S.), and Chapters 62-4, 62-210, 212, 272, 275, 276, and 297, Florida Administrative Code (F.A.C.). The above named permittee is hereby authorized to perform the work or operate the emission unit shown on the application and approved drawings, plans, and other documents attached hereto or on file with the Department of Environmental Protection (Department) and specifically described as follows:

For the increase in production of the No. 4 and No. 5 Phosphoric Acid plants from a total of 140 to 170 tons P_2O_5 per hour along with the construction of a new phosphoric acid filter and scrubber.

The facility is located at 3200 Highway 60 West, Bartow, Polk County, Florida. The UTM coordinates are Zone 17: 409.9 km East and 3,086.8 km North.

The source shall be constructed in accordance with the permit application, plans, documents, amendments and drawings, except as otherwise noted in the General and Specific Conditions.

Attachments are listed below:

1. DEP's letter dated January 12, 1995.
2. USDOI's letter dated February 1, 1995.
3. KBN's letter dated February 2, 1995.
4. DEP's letter dated February 15, 1995.
5. KBN's letter dated March 15, 1995.

GENERAL CONDITIONS:

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.

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.

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.

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.

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.

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.

7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of

GENERAL CONDITIONS:

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.

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.

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.

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.

GENERAL CONDITIONS:

11. This permit is transferable only upon Department approval in accordance with Rules 62-4.120 and 62-30.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.

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

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)

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.

GENERAL CONDITIONS:

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.

SPECIFIC CONDITIONS:

1. Unless otherwise indicated, the construction and operation of the subject phosphoric acid production facility shall be in accordance with the capacities and specifications stated in the application.

2. Pursuant to Rule 62-212.200(56), F.A.C., the production rate of the Nos. 4 and 5 Phosphoric Acid Plants shall not exceed 170 tons P_2O_5 per hour.

3. Pursuant to Rule 62-212.200(56), F.A.C., the Nos. 4 and 5 Phosphoric Acid Plants may operate up to 8760 hours per year.

4. Pursuant to Rule 62-212.410, F.A.C., fluoride emissions from the Nos. 4 and 5 Phosphoric Acid Plants shall not exceed the following:

No. 4 Scrubber - 0.53 lb/hr and 2.32 TPY
No. 5 Scrubber - 1.06 lb/hr and 4.64 TPY
New Filter Scrubber - 0.70 lb/hr and 3.05 TPY

5. Pursuant to Rule 62-297.340(1)(a), F.A.C., and before this construction permit expires, testing for fluorides shall be conducted simultaneously on the three scrubber stacks with the emission unit 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 capacity (i.e., less than 90 percent of 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.

6. Pursuant to Rule 62-297.340(1)(i), the Department's Southwest District office shall be notified in writing at least 15 days prior to source testing. Pursuant to Rule 17-297.570(1) and (2), written reports of the test results shall be submitted to that office within 45 days of test completion.

SPECIFIC CONDITIONS:

7. Pursuant to Rules 62-296.800 and 62-297.401, F.A.C., the test procedures for fluorides, shall be in accordance with EPA Reference Methods 1, 2, 3, and 13A or 13B, respectively, as published in 40 CFR 60, Appendix A.

8. Pursuant to Rule 62-296.320(2), F.A.C., Objectionable Odor Prohibited, no person shall cause, suffer, allow, or permit the discharge of air pollutants which cause or contribute to an objectionable odor.

9. Pursuant to Rule 62-210.650, F.A.C., Circumvention, 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.

10. Pursuant to Rule 62-210.700, Excess Emissions, the Nos. 4 and 5 plants are subject to the following:

a. Rule 62-210.700(1): 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.

b. Rule 62-210.700(4): 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.

c. Rule 62-210.700(5): 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.

d. Rule 62-210.700(6): 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.

11. Pursuant to Rules 62-210.370(2)(a) and (b), F.A.C., Reports, the permittee shall submit an Annual Operating Report using DEP Form 62-210.900(4) to the Department's Southwest District office by March 1 of the following year for the previous year's operation.

SPECIFIC CONDITIONS:

12. Pursuant to Rule 62-4.090, F.A.C., the permittee, for good cause, may 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.

13. Pursuant to Rules 62-4.055 and 62-4.220, F.A.C., an application for an operation permit must be submitted to the Southwest District office at least 90 days prior to the expiration date of this construction permit. To properly apply for an operation permit, the applicant shall submit the appropriate application form, fee, certification that construction was completed noting any deviations from the conditions in the construction permit, and compliance test reports as required by this permit.

Issued this _____ day
of _____, 1995

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

_____
Virginia B. Wetherell, Secretary

Best Available Control Technology (BACT) Determination
Cargill Fertilizer, Inc.
Bartow, Polk County, Florida
PSD-FL-224
AC53-262532

The applicant proposes to increase phosphoric acid production from 140 tons P2O5 per hour (TPH) to 170 TPH by reconfiguring and combining two existing plants and installing an additional phosphoric acid filter. The proposed project for the Bartow facility will result in a significant increase in emissions of gaseous fluorides (F as SiF4 and HF). The project is, therefore, subject to Prevention of Significant Deterioration (PSD) review in accordance with Rule 62-212.400, Florida Administrative Code (F.A.C.). The BACT determination is part of the review required by Rule 62-212.410, F.A.C.

Date of Receipt of BACT Application: March 15, 1995

BACT Determination Proposed by Applicant:

Emission Limit: 0.016 lb F/ton P2O5 input

Control Technology: Two existing spray/packed crossflow scrubbers plus a new venturi scrubber with demister. All scrubbers using recycled pond water.

BACT Determination Procedure:

In accordance with F.A.C. Chapter 62-212, this BACT determination is based on the maximum degree of reduction of each pollutant emitted which the 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, Rule 62-212.410(1), F.A.C., states that in making the BACT determination the Department shall give consideration to:

(a) Any Environmental Protection Agency determination of Best Available Control Technology pursuant to Section 169, and any emision 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).

(b) All scientific, engineering, and technical material and other information available to the Department.

(c) The emission limiting standards or BACT determinations of any other state.

(d) 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 source in question the most stringent control available for a similar or identical source or source category. If it is shown that this level of control is technically or economically infeasible for the source, 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.

BACT Determined by DEP:

Emission Limit: 0.0135 lb F/ton P2O5 input

Control Technology: Packed scrubbers or venturi primary with packed secondary scrubbing using pond water.

BACT Determination Rationale:

The applicant based the proposed BACT emission limit of 0.016 lb F per ton P2O5 on a statistical analysis of annual compliance test data for the two existing plants over the last three years. Emissions estimates for the new filter and newly evacuated tanks are based on a similar installation at the applicant's Riverview facility south of Tampa. Those emission test results and the applicant's statistical analysis are tabulated below:

No. 4 Phosphoric Acid Plant:

Date Tested	P2O5 Tons/hr	Run No.	lb F/ton P2O5
04/24/92	34.2	1	0.0041
		2	0.0047
		3	0.0047
11/04/92	30.8	1	0.0075
		2	0.0045
		3	0.0104
08/26/93	36.3	1	0.0047
		2	0.0037
		3	0.0050
08/25/94	35.6	1	0.0029
		2	0.0010
		3	0.0012
Average	34.2	12 runs	0.0045

Standard Dev.			0.0024
95% Conf.Lev. = 0.0045+1.96(0.0024)=			0.0092
95% Conf.Lev. lb F/hr =34.2(0.0092)=			0.31

No. 5 Phosphoric Acid Plant:

06/27/92	84.0	1	0.0065
		2	0.0105
		3	0.0055
12/11/92	84.0	1	0.0018
		2	0.0020
		3	0.0017
09/02/93	75.9	1	0.0090
		2	0.0047
		3	0.0045
09/01/94	71.2	1	0.0049
		2	0.0045
		3	0.0052
11/09/94	79.0	1	0.0016
		2	0.0030
		3	0.0032
Average	78.8	15 runs	0.0046
Standard Dev.			0.0025
95% Conf.Lev. = 0.0046+1.96(0.0025)=			0.0095
95% Conf. Lev. lb F/hr=78.8(0.0095)=			0.75

Riverview Filter:

02/26/92	123.6	1	0.0010
		2	0.0015
01/14/93	(Not Given-	1	0.0032
	use weighted	2	0.0026
	average of 125.4)	3	0.0025
03/18/93	135.9	1	0.0021
		2	0.0021
		3	0.0019
03/17/94	126.7	1	0.0045
		2	0.0120
		3	0.0040
Average	128.3	11 runs	0.0034
Standard Dev.			0.0030
95% Conf.Lev. = 0.0034+1.96(0.0030)=			0.0093
95% Conf. Lev. lb F/hr=128.3(0.0093)=			1.19*

*The applicant calculated 95% C.L. filter emissions @ 1.13 lb F/hr, however, it appears that the standard deviation was underestimated by about 5%.

The Department's position on the use of what may be called "confidence interval statistics" in setting emission limits (particularly for "top-down" BACT limits where continuous emission monitors are not involved and manual tests are done under the best conditions) is that confidence intervals may provide insight on frequency of compliance, but should not necessarily dictate a margin of safety for meeting the limits established. The use of confidence interval statistics are more appropriate for making inferences and establishing significance of differences in compliance test data than for establishing a safety factor for a BACT emission limit. A proper application of these statistics is the Student's t test procedures listed in 40 CFR 60, Appendix C, which are used to determine whether, within the 95% confidence interval, an increase in emissions has occurred due to a physical or operational change in an existing facility.

In developing federal new source performance standards (NSPS), the usual EPA procedure involves setting the limit at or marginally above the highest representative test result for all plants determined to be exemplary for the source category. Development of NSPS may involve statistical exercises to show that the limit can be achieved by every new source within a given category. On the other hand, a BACT limit does not require the same statistical tolerances suitable for NSPS limits. A BACT limit represents the greatest degree of emissions reduction that can be consistently achieved at a specific source while accounting for site-specific variables on a case-by-case basis. If all valid test data points for that source fall below the BACT limit selected, the Department will presume that the source can consistently meet the BACT limit.

The issue of what constitutes a valid data point is of primary concern here. In setting BACT limits for this source category, the Department is aware that pond water entrainment can be a source of sample contamination for fluoride scrubbers using recirculated pond water. Where entrainment is suspected, it is reasonable to reject the extremely high values if they are far removed from the sample population mean. The following analysis of the critical normal deviate values at the 95% confidence level illustrates this (the normal deviate value is found by subtracting the mean and dividing the result by the standard deviation):

No. 4 Phosphoric Acid Plant:

Date Tested	P2O5 Tons/hr	Run No.	lb F/ ton P2O5	Normal Deviates -1.96 to +1.96
04/24/92	34.2	1	0.0041	- 0.17
		2	0.0047	+ 0.08
		3	0.0047	+ 0.08
11/04/92	30.8	1	0.0075	+ 1.25
		2	0.0045	0.00
		3	0.0104	+ 2.46 > 1.96

08/26/93	36.3	1	0.0047	+ 0.08	
		2	0.0037	- 0.33	
		3	0.0050	+ 0.21	
08/25/94	35.6	1	0.0029	- 0.67	
		2	0.0010	- 1.46	
		3	0.0012	- 1.38	
Average	34.2	12 runs	0.0045		
Standard Dev.			0.0024		

No. 5 Phosphoric Acid Plant:

06/27/92	84.0	1	0.0065	+ 0.76	
		2	0.0105	+ 2.36	> 1.96
		3	0.0055	+ 0.36	
12/11/92	84.0	1	0.0018	- 1.12	
		2	0.0020	- 1.04	
		3	0.0017	- 1.16	
09/02/93	75.9	1	0.0090	+ 1.76	
		2	0.0047	+ 0.04	
		3	0.0045	- 0.04	
09/01/94	71.2	1	0.0049	+ 0.12	
		2	0.0045	- 0.04	
		3	0.0052	+ 0.24	
11/09/94	79.0	1	0.0016	- 1.20	
		2	0.0030	- 0.64	
		3	0.0032	- 0.56	
Average	78.8	15 runs	0.0046		
Standard Dev.			0.0025		

Riverview Filter:

02/26/92	123.6	1	0.0010	- 0.80	
		2	0.0015	- 0.63	
01/14/93	(Not Given-	1	0.0032	- 0.07	
	assume 125)	2	0.0026	- 0.27	
		3	0.0025	- 0.30	
03/18/93	135.9	1	0.0021	- 0.43	
		2	0.0021	- 0.43	
		3	0.0019	- 0.50	
03/17/94	126.7	1	0.0045	+ 0.37	
		2	0.0120	+ 2.87	> 1.96
		3	0.0040	+ 0.20	
Average	128.3	11 runs	0.0034		
Standard Dev.			0.0030		

The above analysis shows that each of the three units had one run where the result lies outside the high end of the critical normal deviate range at the 95% confidence level. None of the runs were really close to being outliers at the low end. The No. 4 value of 2.46 and the No. 5 value of 2.36 would be outliers even at the 98% confidence interval where the critical normal deviate is 2.33. The 2.87 value for the Riverview filter would be an outlier even at the 99% confidence interval of 2.57. Therefore, it is presumed that these high end values should not be relied upon, and in the absence of simultaneous scrubber inlet samples to show otherwise, it is logical to presume that they were due to entrainment. With the process operating at normal steady state conditions, it is very unlikely that scrubber inlet gas concentrations would have gone up by a factor of 2.0 - 3.5 above the norm. With the high end outliers rejected, the statistical analysis changes as shown below:

No. 4 Phosphoric Acid Plant:

Date Tested	P2O5 Tons/hr	Run No.	lb F/ton P2O5
04/24/92	34.2	1	0.0041
		2	0.0047
		3	0.0047
11/04/92	30.8	1	0.0075
		2	0.0045
08/26/93	36.3	1	0.0047
		2	0.0037
		3	0.0050
08/25/94	35.6	1	0.0029
		2	0.0010
		3	0.0012
Average	34.5	11 runs	0.0040
Standard Dev.			0.0018
95% Conf.Lev. = 0.0040+1.96(0.0018)=			0.0075
95% Conf.Lev. lb F/hr =34.5(0.0075)=			0.2588

No. 5 Phosphoric Acid Plant:

06/27/92	84.0	1	0.0065
		3	0.0055
12/11/92	84.0	1	0.0018
		2	0.0020
		3	0.0017
09/02/93	75.9	1	0.0090
		2	0.0047
		3	0.0045
09/01/94	71.2	1	0.0049
		2	0.0045
		3	0.0052

11/09/94	79.0	1	0.0016
		2	0.0030
		3	0.0032
Average	78.4	14 runs	0.0042
Standard Dev.			0.0021
95% Conf.Lev. = 0.0042+1.96(0.0021)=			0.0083
95% Conf. Lev. lb F/hr=78.4(0.0083)=			0.6507

Riverview Filter:

02/26/92	123.6	1	0.0010
		2	0.0015
01/14/93	(Not Given-	1	0.0032
	assume 125)	2	0.0026
		3	0.0025
03/18/93	135.9	1	0.0021
		2	0.0021
		3	0.0019
03/17/94	126.7	1	0.0045
		3	0.0040
Average	128.3	10 runs	0.0025
Standard Dev.			0.0011
95% Conf.Lev. = 0.0025+1.96(0.0011)=			0.0047
95% Conf. Lev. lb F/hr=128.3(0.0047)=			0.6030

Fluoride emissions from the newly evacuated clarifiers and acid storage tanks were projected by the applicant on the basis of tests done on similar equipment at the applicant's Riverview facility. It was assumed that acid composition, temperature, air flow and other variables would not be substantially different at the two facilities, so that controlled emissions from the Bartow tanks could be projected from the Riverview data by ratioing the surface areas. The tank emissions are relatively low compared to emissions from the reactors and filters, therefore the Department accepts the applicant's estimate of these emissions.

The applicant stated that fluoride emissions will increase in direct proportion to the production rate and therefore the hourly emissions should be multiplied by the ratio of the new vs. existing production rates. To arrive at their proposed limit, they ratioed the increase in P2O5 input (71% for No. 4 and 42% for No. 5) and multiplied the ratio by the hourly emissions tested at the lower rates. This conclusion is not supported by all of the data, however. As indicated on page A-15 of the application, if the 11/04/92 and 08/26/93 tests for the No. 4 plant are compared, hourly emissions decreased by 35% with a 19% increase in feed rate. Looking at the two 1992 tests on the No. 5 plant, emissions varied by a factor of 4 while the feed rate was the same. For all tests combined, the Nos. 4 and 5 plants had the same average emissions per ton while the production rate of the No. 5 plant was over twice that of the No. 4 plant.

The Department questions the assumption of direct variability of fluoride emissions with production on a theoretical basis as well. Evolution of gaseous fluorides should not increase proportionately from a liquid-air interface where the liquid bulk throughput goes up but there is not a proportionate increase in the concentration or vapor pressure driving forces or the surface area available for mass transfer. There will be an increase in reactor temperature with higher input rates, but it should not account for a proportionate impact on mass transfer driving forces. The rate of evacuation from the vessel surfaces (air flow rate pulled across the top of the tank for evacuation) will affect the rate of fluoride evolution due to the saturation of more air with fluoride vapors, however, the air flow will not be increased at the higher production rate. Therefore, there is no apparent theoretical mechanism on which to base the assumption that fluoride emissions will go up in direct proportion to production.

When the emissions from all of the sources are added, the following total emissions are obtained:

	Applicant's Analysis lb F/hr		DEP's Analysis lb F/hr	
No. 4 Reactor/Filter	0.31(58/34)	=0.53	0.259(58/34)	=0.44
No. 5 Reactor/Filter	0.75(112/79)	=1.06	0.651(112/79)	=0.92
New Filter(Based on 128.3 TPH avg)		=1.19		=0.60
Clarifiers/Tanks		=0.016		=0.016
Total lb F/hr		=2.80		=1.98
lb/ton P2O5	2.80/170	=0.0164	1.98/170	=0.0116

The 0.0116 value, rounded to 0.012, is equal or higher than all of the data points including the outliers rejected in the Department's analysis. The Department believes that 0.012 lb F/ ton P2O5 would be the appropriate BACT limit for a new wet process phosphoric acid plant being built today using recirculated pond water for scrubbing. (The applicant's proposal for the new filter overestimates potential emissions since it was based on the Riverview plant's production rate (128.3 TPH) rather than the 58 TPH rate proposed for the reconfigured No. 4 plant).

This project involves a combination of new and existing units. The existing scrubbers serve existing sources whereas the new scrubber will control new emissions (i.e. the new filter, the new slurry and filtrate tanks, and the newly evacuated 30% acid clarifier tanks). The existing scrubbers have fixed capacity and will handle some additional load although, as mentioned above, the extent of actual increased fluoride emissions is in doubt. For these reasons, the Department believes it is reasonable to establish the following separate limits for this hybrid facility:

No. 4 and No. 5 Reactors/Filters = 1.59 lb F/hr (Appl. Analysis)
New Filter and Clarifier/Tanks = 0.70 lb F/hr (58 x 0.012)*
Equivalent Combined Limit = 2.29/170 = 0.0135 lb F/ton P2O5

*(This is a liberal application of the plant-wide BACT limit since 0.012 should cover the entire process for a new plant)

For the new filter scrubber, the applicant proposes to install a venturi scrubber with a demister, purporting to have a fluoride removal efficiency of 99% at a total pressure drop of 0.45 in. H2O. The Department does not agree that this proposal represents BACT for fluoride scrubbing of a major emission-contributing step in a modern wet-process phosphoric acid plant. Venturi scrubbers have been used for small non-BACT applications such as scrubbing individual tank vents, but the Department is not aware of BACT installations where low energy venturis alone were able to achieve the removal required for the reactor or filtration steps. Either a packed scrubber or a venturi followed by a packed scrubber would be required to meet BACT requirements.

The Department's findings are consistent with the following excerpts from a technical paper by Dr. A. J. Teller entitled "Control of Gaseous Fluoride Emissions" published in Chemical Engineering Progress in March 1967:

"...Inasmuch as efficiencies on the order of 99+% are required, 4.6 transfer units must be provided by the system if the scrubbing medium exerts no equilibium partial pressure during its exposure to the gas. Where recycle pond water is used, without neutralization, a greater number of transfer units is required; as many as 8 transfer units have been achieved in several installations. When the demand for recovery of gaseous pollutants was on the order of 95%, the integral type of contact system (cyclonics, venturis, sprays) was an effective means of control. In this case, "integral" means that a set number of transfer units can be provided by the system with only a very small variation in system performance achievable with modification of geometry." (p. 77)

"...With the advent of the requirement for recoveries exceeding 99%, and the concomitant complication of the effect of the scrubbing liquor partial pressure, the transfer unit requirements for absorption increased dramatically. Thus, the integral system alone has not provided sufficient capability and series systems, and differential transfer systems, either alone or in combination with integral systems, have been used. In general, if a combined

system is used, the integral component is called the "primary scrubber" and the differential component is called the "tail gas scrubber". The duty of the primary scrubber is to remove the major component of the fluoride gases with the first 2 to 3.5 transfer units. The duty of the tail gas scrubber is to remove the residuum, the smaller quantity of material requiring the greater number of transfer units. Its additional service is to provide flexibility (that is, additional transfer units if necessary) with no major change in capital investment or operating costs." (p. 78)

Conclusion:

The environmental effects from fluoride emissions due to the proposed modification are not expected to have any adverse impact in the vicinity of the applicant's facility. The proposed limit reflects a reduction in allowable emissions. Therefore, it is concluded that the control equipment and emission limit proposed by the Department represents the best available control technology.

BACT Analysis Details Available From:

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Recommended by:

C. H. Fancy, P.E., Chief
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Date

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Date