Department of Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

October 24, 1995

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. David B. Jellerson
Environmental Superintendent
Cargill Fertilizer, Inc.
Post Office Box 9002
Bartow, Florida 33831

Dear Mr. Jellerson:

Enclosed is a copy of the Technical Evaluation and Preliminary Determination, Best Available Control Technology (BACT) determination, Intent to Issue, and proposed permit for Cargill Fertilizer to increase the production rate of the Nos. 4, 5 and 6 sulfuric acid plants and associated sulfur throughput rate at their Bartow facility, 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 you have any questions, please call Mr. Syed Arif at 904-488-1344.

Sincerely,

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

CHF/sa/t

Enclosures

cc: W. Thomas, SWD
R. Harwood, Polk Co.
J. Harper, EPA
J. Bunyak, NPS
D. Buff, KBN

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

In the Matter of an
Application for Permit by:

DEP File No. PSD-FL-229
AC 53-271436
Polk County

Mr. David B. Jellerson
Environmental Superintendent
Cargill Fertilizer, Inc.
Post Office Box 9002
Bartow, Florida 33831
_____/

INTENT TO ISSUE

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

The applicant, Cargill Fertilizer, Inc. applied on May 24, 1995, to the Department for a permit to increase the combined total production of their sulfuric acid plants, Nos. 4, 5 and 6 from 6,840 to 7,800 tons per day and associated sulfur throughput rate. 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 is required for the proposed project.

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. 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.

The Department will issue the permit 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 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 all copies of this **INTENT TO ISSUE PERMIT** were mailed by certified mail before the close of business on 10-25-95 to the listed persons.

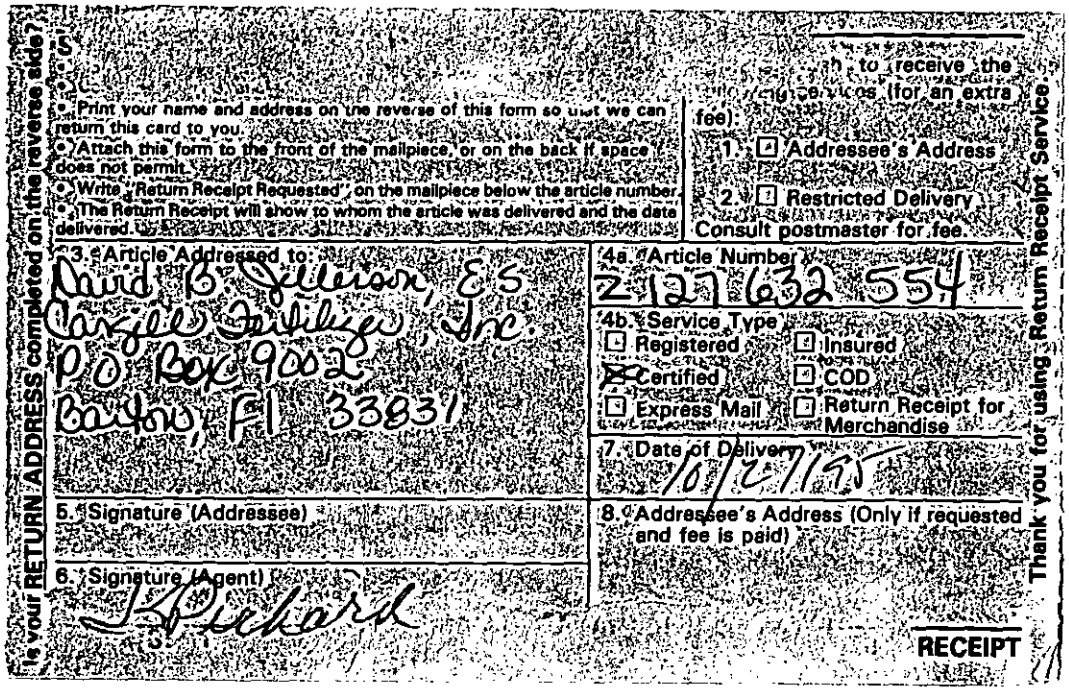
Clerk Stamp

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.

Clerk

10-25-95
Date

Copies furnished to:
W. Thomas, SWD
R. Harwood, Polk Co.
J. Harper, EPA
J. Bunyak, NPS
D. Buff, KBN



• Print your name and address on the reverse of this form so that we can return this card to you.
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• 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.

...h to receive the following services (for an extra fee):
1. ☐ Addressee's Address
2. ☐ Restricted Delivery
Consult postmaster for fee.

3. Article Addressed to:
David B. Jellerson, E.S.
Cargill Fertilizer, Inc.
P.O. Box 9002
Bartow, FL 33831

4a. Article Number
Z 127 632 554

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

7. Date of Delivery
10/27/95

5. Signature (Addressee)

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6. Signature (Agent)
J Pickard

RECEIPT

Thank you for using Return Receipt Service.

Is your RETURN ADDRESS completed on the reverse side?

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Receipt for Certified Mail
No Insurance Coverage Provided
Do not use for International Mail
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UNITED STATES POSTAL SERVICE

Sent to: David B Jellerson	
Street and No.: Cargill Fertilizer	
P.O., State, and ZIP Code: Bartow, FL	
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	10-25-95

AC53-271436
PSD-FL-229

PS Form 3800, March 1993

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
NOTICE OF INTENT TO ISSUE PERMIT

PSD-FL-229
AC 53-271436

The Department of Environmental Protection (Department) gives notice of its intent to issue a permit to Cargill Fertilizer, Inc., Post Office Box 9002, Bartow, Florida 33831. The permit will allow the applicant to modify (increase production) the existing Nos. 4, 5 and 6 sulfuric acid plants and associated sulfur feed rates at Cargill Fertilizer, Inc.'s phosphate fertilizer manufacturing plant at 3200 Highway 60 West in Bartow, Polk County, Florida. The modification to the sulfuric acid plant requires a Best Available Control Technology (BACT) determination for sulfur dioxide, nitrogen oxides and acid mist. BACT consist of the double absorption process for sulfur dioxide control, high efficiency mist eliminators for controlling acid mist and good combustion practices for nitrogen oxides. The maximum predicted PSD Class II sulfur dioxide increments to be consumed by the proposed project are the following: 3.39 annual average, or up to 17% of the available annual increment of 20 ug/m^3, 9.5 ug/m^3, 24-hour average, or up to 10% of the available 24-hour increment of 91 ug/m^3, and 28.9 ug/m^3, 3-hour average, or up to 5.6% of the available 3-hour increment of 512 ug/m^3.

The maximum predicted PSD Class I sulfur dioxide increments to be consumed by the proposed project are the following: 0.007 ug/m^3 or up to 3.4% of the available annual increment of 2.0 ug/m^3; 0.36 ug/m^3, 24-hour average or up to 7.2% of the available 24-hour increment of 5.0 ug/m^3; and 1.53 ug/m^3, 3-hour average, or up to 6.1% of the available 3-hour increment of 25 ug/m^3. Modeling results show that increases in ground-level concentrations are less than Prevention of Significant Deterioration (PSD) significant impact levels for NOx in both the Class I and II areas. Emissions from this modification will not cause or significantly contribute to a violation of any ambient air quality standard or Prevention of Significant Deterioration (PSD) increment. 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 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
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 Administrator, New Source Review Section, Bureau of Air Regulation 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.
Bartow, Polk County, Florida

SULFURIC ACID PRODUCTION INCREASE
SAP Nos. 4, 5 and 6

Molten Sulfur Storage and Handling Facility

File No.: AC 53-271436 (PSD-FL-229)

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

October 25, 1995

I. General Information

A. Applicant

Cargill Fertilizer, Inc.
Post Office Box 9002
Bartow, Florida 33831

B. Request

On May 24, 1995, Cargill Fertilizer, Inc. submitted an application for permits to construct (modify) their existing molten sulfur storage and handling facility (SIC 2819) and to construct (modify) the existing Nos. 4, 5 and 6 sulfuric acid plants (SIC 2819). This application was considered complete on July 27, 1995, when the Department received KBN's letter providing the additional information on the project requested by the Department. All of these sources are located at the applicant's phosphate fertilizer manufacturing plant at 3200 Highway 60 West in Bartow, Polk County, Florida. The UTM coordinates for this facility are Zone 17, 409.8 km E and 3087.0 km N.

C. Project

The applicant proposes to increase the total production of the Nos. 4, 5 and 6 sulfuric acid plants from 6,840 TPD to 7,800 TPD. The basic sulfuric acid process is not being changed. No additional air pollution control equipment will be installed on the plant. The proposed project will involve an increase in the amount of catalyst utilized in the process with some equipment changes. The catalyst promotes conversion of sulfur dioxide to sulfur trioxide which is converted to sulfuric acid in a double absorption unit. Essentially the process itself serves as the air pollution control equipment.

The molten sulfur storage and handling facility consists of a railcar receiving pit, a truck receiving pit, a 7,500 ton storage tank, a 3,000 ton storage tank, and associated piping, pumps, etc. Additional sulfur will be required to increase the production of the sulfuric acid plants. The sulfur feed rate to the sulfuric acid plant will increase from 815,000 tons per year to 960,000 tons per year. The molten-sulfur handling and storage facilities will also be physically modified in order to better accommodate the increase in actual daily and annual throughput rates. The existing 1,000-ton storage tank will be replaced with a 7,500-ton tank.

D. Emissions

The molten sulfur storage and handling facility will increase its throughput from 815,000 to 960,000 TPY. Table I summarizes the estimated total emissions from the sulfur storage and handling facility.

Table I
Molten Sulfur Storage and Handling Facility

	Total Emissions (TPY)	Max. Emissions (lb/hr)
Sulfur Particulate (SP)	5.35	1.28
Sulfur Dioxide	13.68	3.26
TRS as H_2S	6.56	1.56
VOC	9.75	2.32

The Nos. 4, 5 and 6 sulfuric acid plants will each increase allowable production from 2,280 to 2,600 TPD of 100% acid. Table II summarizes the changes in total emissions from the three sulfuric acid plants.

Table II
Sulfuric Acid Plant Emissions

	Production (TPD)	Sulfur Dioxide			Acid Mist			NO_x
		lbs/ Ton Acid	lbs/hr	TPY	lbs/ Ton Acid	lbs/hr	TPY	TPY
Proposed	7800	4	1300.0	5694.0	0.15	48.8	213.5	213.5
Present*	6840	4	1140.0	4993.2	0.15	42.8	187.2	149.8
Increase	960		160.0	700.8		6.0	26.3	63.7

* - allowable emissions

From the previous two tables, it can be seen that the increase in emissions of sulfur dioxide, acid mist and NO_x exceed the significant emissions rates listed in Table 212.400-2 of F.A.C. Rule 62-212.

II. Rule Applicability

The proposed projects, modification of the molten sulfur storage and handling facility and the sulfuric acid plants at a phosphate fertilizer plant, are subject to preconstruction review requirements under the provisions of Chapter 403, Florida Statutes, and Chapters 62-210 through 62-297, Florida Administrative Code (F.A.C.).

The sources are in Polk County, an area designated attainment for all criteria pollutants (F.A.C. Rule 62-275.400).

The facility (SIC 2874) is a major source of acid mist, sulfur dioxide and nitrogen oxides because the potential emissions of each of these pollutants exceeds 100 TPY. Chemical process plants are listed in Table 212.400-1, Major Facility Categories.

The proposed project is subject to the Prevention of Significant Deterioration Regulations, F.A.C. Rule 62-212.400, because the contemporaneous emissions increases of sulfur dioxide, acid mist and nitrogen oxides from the sulfuric acid plants exceed the significant emission rates listed in Table 212.400-2 of F.A.C. Rule 62-212. The emission limits for these pollutants for the sulfuric acid plants will be established by a Best Available Control Technology (BACT) determination pursuant to F.A.C. Rule 62-212.410. The applicant is also subject to the other preconstruction review requirements listed in F.A.C. Rule 62-212.400.

In addition, the proposed modifications are subject to 40 CFR 60, Subpart H, Standards of Performance for Sulfuric Acid Plants, and F.A.C. Rule 62-296.411, Sulfur Storage and Handling Facilities.

III. Technical Evaluation

The applicant assumes that the increased throughput for the molten sulfur storage and handling facility will cause a proportional increase in air emissions. These emissions will comply with the applicable regulations.

The emission limits proposed as BACT for the sulfuric acid plants and accepted by the Department are equivalent to the new source performance standards listed in 40 CFR 60, Subpart H. Emission test results on a similar modified plant showed that it had met these emission limits.

IV. Air Quality Impact Analysis

A. Introduction

The proposed Cargill Fertilizer Inc. project will emit three pollutants in PSD significant amounts. They are the criteria pollutants sulfur dioxide (SO_2), nitrogen oxides (NOx), and non-criteria pollutant sulfuric acid (H_2SO_4). Values for all pollutants emitted by the project are shown in Table 1.

The air quality impact analyses required by the PSD regulations for these pollutants includes:

* An analysis of existing air quality;
* A PSD increment analysis (for SO_2 and NOx);
* An Ambient Air Quality Standards (AAQS) analysis (for SO_2 and NOx);

* An analysis of impacts on soils, vegetation, and visibility and of growth-related air quality modeling impacts; and
* A "Good Engineering Practice" (GEP) stack height determination.

The analysis of existing air quality generally relies on preconstruction monitoring data collected with EPA-approved methods. The PSD and AAQS analyses depend on the air quality dispersion modeling carried out in accordance with EPA guidelines.

Based on the required analyses, the Department has reasonable assurance that the proposed project, as described in this report and subject to the approval proposed herein, will not cause or contribute to a violation of any AAQS or PSD increment. However, the following EPA-directed stack height language is included: "In approving this permit, the Florida Department of Environmental Protection has determined that the application complies with the applicable provisions of the stack height regulations as reviewed by EPA on July 8, 1985 (50 FR 27895). Portions of the regulations have been remanded by a panel of the U.S. Court of Appeals for the D.C. Circuit in NRDC vs. Thomas, 838 F. 2d 1224 (D.C. Cir. 1988). Consequently, this permit may be subject to modification if and when EPA revises the regulation in response to the court decision. This may result in revised emission limitations or may affect other actions taken by the source owners or operators." A discussion of the modeling procedure and required analyses follows.

B. Analysis of Existing Air Quality and Determination of Background Concentrations

Preconstruction ambient air quality monitoring is required for all pollutants subject to PSD review. However, an exemption to the monitoring requirement may be obtained if the maximum air quality impact resulting from the projected emissions increase, as determined by air quality modeling, is less than a pollutant-specific "de minimis" concentration. Pollutants which do not have a specified de minimis level may also be exempt from preconstruction monitoring requirements.

The maximum concentrations predicted for the proposed project for comparison to the PSD de minimis monitoring concentrations are presented in Table 2. Table 2 shows that SO_2 and NO_2 impacts from the project are predicted to be less than the de minimis levels. Therefore, preconstruction ambient air quality monitoring is not required for these pollutants.

Even if preconstruction ambient monitoring is exempted, determination of background concentrations for PSD significant pollutants may be necessary for use in any required AAQS analysis. These concentrations may be established from the required preconstruction ambient air quality monitoring analysis or from

previously existing representative monitoring data. These background ambient air quality concentrations are added to pollutant impacts predicted by modeling and represent the air quality impacts of sources not included in the modeling.

Since an AAQS analysis is required for SO_2 (the project's impact alone for this pollutant is greater than the significant impact level, as will be discussed later in this section), previously existing representative monitoring data from an SO_2 monitor located in the vicinity of the project is used to establish background concentrations. The background SO_2 concentration used in the AAQS analysis is given in Table 7.

There are no monitoring de minimus concentrations for H_2SO_4 mist.

C. Modeling Procedure

The EPA-approved Industrial Source Complex (ISC2) dispersion model was used to evaluate pollutant emissions from the proposed project. The model determines ground-level concentrations of inert gases or small particles emitted into the atmosphere by point, area and volume sources. The model incorporates elements for plume rise, transport by the mean wind, Gaussian dispersion, and pollutant removal mechanisms such as deposition. This model allows for the separation of sources, building wake downwash, and various other input and output features. A series of specific model features, recommended by the EPA, are referred to as the regulatory options. The applicant has used the EPA recommended regulatory options in each modeling scenario. The potential for building downwash to occur was considered in the modeling analysis since the stacks are less than GEP height.

Meteorological data used in the modeling analyses consisted of five years (1982-1986) of hourly surface observations and twice-daily upper air soundings from the National Weather Service (NWS) stations at Tampa and Ruskin, respectively. These NWS stations were selected for use in the study because they are the closest primary weather stations and are most representative of the plant site. The surface observations included wind direction, wind speed, temperature, cloud cover and cloud ceiling. Since five years of data were used, the highest-second high, short-term predicted concentrations are compared with the appropriate AAQS or PSD increments. For the annual averages, the highest predicted yearly average was compared with the standards.

To determine the SO_2 significant impact area, concentrations were predicted for 216 receptors located in a radial grid centered on the H_2SO_4 No. 4 stack. Receptors were located in "rings" with 36 receptors per ring, spaced at 10 degree intervals

and at distances of 5, 7, 10, 15, 20 and 25 km from the H_2SO_4 No. 4 stack location. The proposed expansion was determined to be significant out to 15 km from the Cargill site.

A polar receptor grid was used to cover the spatial extent of the proposed project's significant impact area (15km). The screening grid included 180 regular grid and 146 discrete receptors. The regular grid receptors were located in rings at distances of 5.0, 7.0, 9.0, 12.0, and 15.0 km from the No. 4 stack. Discrete receptors included 36 receptors located on the plant boundary at 10 degree intervals, plus 110 additional off-property receptors at distances of 1.5, 2.0, 2.5, 3.0, and 4.0 km to cover the area between the property boundary and the closest regular receptor grid distance.

Impacts for the PSD Class I Chassahowitzka National Wilderness Area (CNWA), located approximately 105 km from the site, were predicted at thirteen standard receptors approved by the Department.

D. Significant Impact Analysis

1. Class II Area

A summary of impacts from the modeling analysis are presented in Table 3 and compared to the significant impact levels. The maximum predicted 3-hr, 24-hr and annual average SO_2 concentrations due to the proposed facility are greater than the respective SO_2 significant impact levels. Therefore, further SO_2 modeling analyses were required. The maximum predicted annual average NO_2 impact is less than the respective NO_2 significant impact level of 1 ug/m3. Therefore, additional modeling analyses for NOx are not required.

2. Class I Area

Maximum NO_2 and SO_2 impacts predicted for the proposed modification only at the CNWA for comparison to the National Park Service (NPS)-recommended Class I significance levels are presented in Table 4.

The maximum predicted SO_2 impacts exceed the NPS significance levels for all averaging time periods. Therefore, a more extensive SO_2 PSD Class I modeling analysis was performed.

The maximum predicted NO_2 impact is less than the NPS Class I NO_2 significant level. Therefore, no further Class I modeling was conducted for this pollutant.

E. PSD Increment Analysis

1. Class II Area

The proposed facility is located in a Class II area. This area is also designated as an attainment area for SO_2. Therefore, a

PSD increment analysis is required to show compliance with the Class II SO_2 increments.

The PSD increment represents the amount that new sources in an area may increase ambient ground level concentrations of a pollutant. Atmospheric dispersion modeling, as previously described, was performed to quantify the amount of PSD increment consumed. An inventory of sources which consumed SO_2 increment in the region was compiled. The modeling results, summarized in Table 5, show that the maximum SO_2 increment consumption will not exceed the allowable PSD increments.

2. Class I Area

Maximum increment consumption values predicted at the Class I area are presented in Table 6. The 24-hour and 3-hour impacts exceed the PSD Class I increment values of 5 and 25 ug/m3, respectively. For assessing the proposed modification's contribution to the predicted PSD Class I violations, a further analysis was performed to determine all time periods and receptors at which a violation occurred. This analysis shows that SO_2 impacts from the proposed H_2SO_4 plant expansion will not contribute significantly to any predicted violation of the allowable PSD Class I increments at the CNWA.

F. AAQS Analysis

For the pollutants subject to an AAQS review, the total impact on ambient air is obtained by adding a background concentration to the maximum modeled concentration. This background concentration takes into account all sources of SO_2 that are not explicitly modeled. The results of the AAQS analysis are shown in Table 7. Emissions from the proposed project are not expected to cause or contribute to a violation of an AAQS.

G. Non-criteria Pollutants

H_2SO_4 mist is a non-criteria pollutant, which means that neither a national AAQS nor a PSD increment has been defined for this pollutant. The H_2SO_4 mist emissions from this project will be controlled by the BACT determination.

H. Additional Impacts Analysis

1. Impacts on Soils and Vegetation

The maximum ground-level concentrations predicted to occur for SO_2 and NO_2, as a result of the proposed project, including any background concentration and all other nearby sources, will be below the associated AAQS. The AAQS are designed to protect both the public health and welfare. As such, this project is not expected to have a harmful impact on soils and vegetation in the PSD Class II

area. An air quality related values (AQRV) analysis was done by the applicant for the PSD Class I area. No significant impacts on this Class I area are expected.

2. Impact on Visibility

Visual Impact Screening and Analysis (VISCREEN), the EPA-approved Level I visibility computer model, was used to estimate the impact of proposed project's stack emissions on visibility in the CNWA area. The results indicate that no significant impact on visibility is predicted for this area.

A regional haze analysis was performed and it shows that no significant impact upon regional haze at the Class I area as result of the proposed modification.

3. Growth-Related Air Quality Impacts

The proposed project will not require an increase in personnel to operate the plant. Therefore, no significant effect on the residential, commercial, and industrial growth in Polk County is predicted.

4. GEP stack height determination

Good Engineering Practice (GEP) stack height means the greater of: (1) 65 meters or (2) the maximum nearby building height plus the 1.5 times the building height or width, whichever is less. The stacks for this project are 61.0 meters. They do not exceed the GEP stack height and will comply with GEP stack height regulations.

V. Conclusion

Based on the information provided by Cargill Fertilizer, Inc. the Department has reasonable assurance that the proposed projects, as described in this evaluation, and subject to the conditions proposed herein, will not cause or contribute to a violation of any air quality standard, PSD increment, or any other technical provision of Chapter 62-209 through 62-297 of the Florida Administrative Code.

10/24

Department of Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

PERMITTEE:
Cargill Fertilizer, Inc.
Post Office Box 9002
Bartow, Florida 33831

Permit Number: AC 53-271436
PSD-FL-229
Expiration Date: Oct. 31, 1998
County: Polk
UTM Coordinates: 17-409.8 km E
17-3087.0 km N
Project: Sulfuric Acid Plant and Molten Sulfur Storage and Handling System

This permit is issued under the provisions of Chapter 403, Florida Statutes (F.S.), and Chapters and 62-4, 62-210, 62-212, 62-272, 62-275, 62-296 and 62-297, Florida Administrative Code (F.A.C.). The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawings, plans, and other documents attached hereto or on file with the Department and specifically described as follows:

For the modifications to increase the production rate of the Nos. 4, 5 and 6 sulfuric acid plants from 6,840 TPD to 7,800 TPD of 100% sulfuric acid and sulfur feed rate to a maximum of 2,630 TPD and 960,000 TPY for the sulfuric acid plants. The sulfur facility consists of a rail and truck unloading systems; one 3000 short ton (ST) molten sulfur storage tank; one 7500 ST molten sulfur storage tank; one 200 ST pit; one 300 ST rail pit; and the associated transfer pumps and piping. The modifications does involve physical change to these plants. The sources are located at the Cargill Fertilizer, Inc. phosphate fertilizer manufacturing plant at 3200 Highway 60 West, Bartow, Polk County, Florida.

This permit is void if construction does not commence within 18 months of its issuance, if construction is discontinued for more than 18 months, or if construction is not completed and the modified plant placed in operation within a reasonable time.

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. Application received May 24, 1995.
2. DEP's letter dated June 19 and 29, 1995.
3. KBN's letter dated July 27, 1995.
4. Memorandum of Understanding Regarding Best Operational Start-up Practices for Sulfuric Acid Plants, 1989

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, Florida Statutes. 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), Florida Statutes, 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 acknowledgment 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

GENERAL CONDITIONS:

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 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

GENERAL CONDITIONS:

arising under the Florida Statutes or Department rules, except where such use is prescribed by Sections 403.73 and 403.111, Florida Statutes. 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 Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.

11. This permit is transferable only upon Department approval in accordance with Florida Administrative Code 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

GENERAL CONDITIONS:

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.

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 subject modification shall be in accordance with the capacities and specifications stated in the application.

2. The maximum production rates for each of the Nos. 4, 5 and 6 sulfuric acid plants shall not exceed 2,600 tons per day based on 100% sulfuric acid (H_2SO_4). [Rule 62-212.200(56), F.A.C.]

3. Sulfur dioxide (SO_2) emissions from each of the Nos. 4, 5 and 6 plants shall not exceed 4 lbs/ton of 100% H_2SO_4, 433.3 lbs/hr, and 1898 tons/yr. [Rule 62-296.800, F.A.C., 40 CFR 60.83(a)]

4. H_2SO_4 mist emissions from each of the Nos. 4, 5 and 6 plants shall not exceed 0.15 lb/ton of 100% H_2SO_4 produced, 16.25 lbs/hr, and 71.2 tons/yr. [Rule 62-296.800, F.A.C.; 40 CFR 60.83(a)(1)]

5. Visible emissions (VE) from the H_2SO_4 plants shall not exceed 10% opacity. VE shall not exceed 20% opacity from any source in the molten sulfur system. [Rule 62-296.800, F.A.C.; 40 CFR 60.83(a)(2)]

6. Nitrogen oxides (NOx) emissions from each of the Nos. 4, 5 and 6 plants shall not exceed 0.12 lb/ton of 100% H_2SO_4 produced, 13

SPECIFIC CONDITIONS:

lbs/hr, and 57 tons/yr. [Rule 62-212.410, F.A.C.]

7. A continuous emission monitor shall be used to monitor SO_2 emissions from the H_2SO_4 plant in accordance with 40 CFR 60, Subpart H (July 1, 1993), Standards of Performance for Sulfuric Acid Plants. Initial compliance tests shall be conducted using: EPA Method 7E for NOx, EPA Method 8 for SO_2 and acid mist, and EPA Method 9 for visible emissions as described in 40 CFR 60, Appendix A (July 1, 1993). [Rule 62-296.800, F.A.C.; 40 CFR 60.84(a)]

8. Testing of emissions from each plant shall be conducted while operating at capacity. Capacity is defined as 90-100% of permitted capacity (2340 - 2600 TPD sulfuric acid production). If it is impracticable to test at capacity, then sources may be tested at less than capacity. In this case subsequent source operation is limited to 110% of the test load until a new test is conducted. Once the unit is so limited, then operation at higher capacities is allowed for no more than fifteen days for purposes of additional compliance testing to regain the rated capacity in the permit, with prior notification to the Department. The Department's Southwest District office shall be notified in writing 15 days prior to source testing. Written reports of the tests shall be submitted to that office within 45 days of test completion.
[Rule 62-297.340(1)(a), F.A.C.]

9. Sulfuric acid plants Nos. 4, 5 and 6 and the molten sulfur storage and handling facility shall be allowed to operate continuously (i.e., 8760 hours/year). [Rule 62-212.200(56), F.A.C.]

10. The combined molten sulfur feed rate to the Nos. 4, 5 and 6 sulfuric acid plants shall exceed neither 2,630 tons per day (TPD), nor 960,000 tons per year (TPY). [Rule 62-212.200(56), F.A.C.]

11. The permittee shall employ proper operation and maintenance procedures to minimize emissions from the molten sulfur system pursuant to the applicable requirements of F.A.C. Rule 62-296.411 [Molten Sulfur Storage and Handling Facilities]. The permittee shall also comply with other applicable provisions of F.A.C. Chapters 62-210, 212, 272, 275, 296, 297; and 62-4.

12. No objectionable odors shall be allowed, in accordance with Rule 62-296.320(2), F.A.C. [Objectionable Odor Prohibited].

SPECIFIC CONDITIONS:

13. Initial compliance tests for the molten sulfur system shall be conducted in accordance with the July 1, 1993, version of 40 CFR 60, Appendix A, using EPA Method 9, for visible emissions. Test run duration shall not be less than 30 minutes. The tests for the vents of the storage tanks and sulfur pits shall be conducted while the tanks and pits are being filled (filling does not have to be continuous during the entire test). Routine VE tests shall be at the frequency specified in the operating permit to be issued by the Southwest District.

14. Any change in the method of operation, equipment or operating hours which would reasonably be expected to result in an increase in emissions shall be submitted to DEP's Southwest District office for approval.

15. For emission inventory and PSD purposes, the estimated total emissions from the sources in the molten sulfur storage and handling facility are:

Pollutant	Total Emissions (TPY)	Max. Emissions (lb/hr)
Sulfur particles emissions	5.35	1.28
TRS (as H_2S) emissions	6.56	1.56
SO_2 emissions	13.68	3.26
VOC emissions	9.75	2.32

16. 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. [Rule 62-4.090, F.A.C.].

17. 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 or within 45 days after completion of compliance testing, whichever occurs first. The operation permit application shall include a set of conditions acceptable to the Department for startup/shutdown of the permittee's sulfuric

SPECIFIC CONDITIONS:

acid plant. 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. [Rules 62-4.055 and 62-4.220, F.A.C.].

STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

Howard L. Rhodes, Director
Division of Air Resources Management

ATTACHMENTS PROVIDED UPON REQUEST

Best Available Control Technology (BACT) Determination
Cargill Fertilizer, Inc.
Polk County
Permit Number AC 53-271436
PSD-FL-229

The applicant proposes to increase sulfuric acid production from 2280 tons per day (TPD) to 2600 TPD for each of the Nos. 4, 5 and 6 sulfuric acid plants. Associated sulfur feed rates to these plants will increase proportionately. The facility is located at 3200 Highway 60 West phosphate fertilizer manufacturing facility near Bartow, Polk County, Florida.

The proposed project will result in a significant increase in emissions of sulfur dioxide (SO_2), sulfuric acid mist and NO_x. The project is therefore subject to Prevention of Significant Deterioration (PSD) review in accordance with F.A.C. Rule 62-212.400.

The BACT review is part of the PSD review requirements in accordance with F.A.C. Rule 62-212.410.

Date of Receipt of a BACT Application: May 24, 1995.

The BACT determination requested by the applicant is presented below:

Control Technology: Double Absorption/Fiber Mist Eliminators

Pollutant	Emission Limits
SO_2	4 lb/ton of 100% H_2SO_4 produced
Sulfuric Acid Mist	0.15 lb/ton of 100% H_2SO_4 produced
Visible Emissions	10% opacity
NOx	0.15 lb/ton of 100% H_2SO_4 produced

Basis of Review:

This determination was based upon input from the applicant, EPA Region IV, and the Bureau of Air Regulation.

BACT Determination Procedure:

In accordance with Florida Administrative Code Chapter 62-212, Air Pollution, 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, the regulations state 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 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).

(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 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.

BACT Determined by DEP:

Control Technology	Double Absorption/Fiber Mist Eliminators
Pollutant	Emission Limits
SO_2	4.0 lb/ton of 100% H_2SO_4 produced
Sulfuric Acid Mist	0.15 lb/ton of 100% H_2SO_4 produced
Visible Emissions	10% opacity
NOx	0.12 lb/ton of 100% H_2SO_4 produced

BACT Determination Rationale

DEP's BACT determination is the same as that proposed by the applicant, determination completed by other states, and Standards of Performance for Sulfuric Acid Plants, 40 CFR 60 Subpart H, (double absorption process). The process itself is the control technology for SO_2. The emission limits reflect conversion efficiency of around 99.7% of SO_2 to H_2SO_4. High efficiency mist eliminators are considered BACT for sulfuric acid mist. A review of BACT/LAER Clearinghouse indicates that the double absorption technology and the use of high efficiency mist eliminators is representative of BACT using the top-down approach. The low NO_X

emissions from Cargill Bartow's sulfuric acid plants are the result of the low combustion temperatures in the sulfur burning system. The Department agrees with the applicant that the low-NO_x emitting combustion system inherent for sulfuric plants are BACT for NO_x emissions, and that it would not be economically feasible for add-on retrofit NO_x control technologies. The Department believes that the facility can meet the NOx emission limit of 0.12 lb/ton of 100% H_2SO_4 produced, as similar facilities in the past have met this emission limit.

Environmental Impact Analysis

The impact analysis for the BACT determination is based on 8,760 hours/year operation. The increment impact analysis and the ambient air quality analysis resulted in the following for SO_2 emissions:

Avg Time	Increment Impact (ug/m^3)	Increment (ug/m^3)	Predicted Ambient Air Quality Impact (ug/m^3)	Fla. AAQS (ug/m^3)
24-hr	41.76	91	186	260
3-hr	257.45	512	557	1300

Conclusion

The incremental impact and the ambient air quality impact from SO_2 emissions due to the proposed modification is in compliance with all air pollution regulations. The impacts associated with the proposed increase in production support the Department's determination that the emission limits established herein represent BACT.

Details of the Analysis May be Obtained by Contacting:

Mr. Syed Arif, Review Engineer or
Mr. A. A. Linero, P.E., Administrator
New Source Review Section
Department of Environmental Protection
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Recommended by:

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

_____ 1995
Date

Approved by:

Howard L. Rhodes, Director
Division of Air Resources Management

_____ 1995
Date