

STATE OF FLORIDA  
DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING  
2600 BLAIR STONE ROAD  
TALLAHASSEE, FLORIDA 32301-8241



BOB GRAHAM  
GOVERNOR  
VICTORIA J. TSCHINKEL  
SECRETARY

May 2, 1986

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Frank W. Cheesman  
Plant Manager  
AMAX Chemical Corporation  
Post Office Box 790  
Plant City, Florida 34289


Dear Mr. Cheesman:

Re: Modifications of Conditions - Permit No. AC 29-091316

The Department is in receipt of Mr. George Townsend's letter requesting the permit to construct a phosphoric acid defluorination plant be extended to allow time for the new management of AMAX to evaluate the need for this plant. The request is acceptable and the expiration date is changed to December 31, 1986.

A copy of this letter must be attached to the referenced construction permit and shall become a part of that permit.

Sincerely,

  
Victoria J. Tschinkel  
Secretary

VJT/ks

cc: Bill Thomas, SW District  
Jerry Campbell, HCEPC



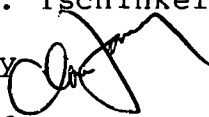
State of Florida  
DEPARTMENT OF ENVIRONMENTAL REGULATION

DER  
MAY 5 1986  
BACM

# Interoffice Memorandum

FOR ROUTING TO OTHER THAN THE ADDRESSEE  
MAY 2 1986

|                         |              |
|-------------------------|--------------|
| To: _____               | LOCTN: _____ |
| To: _____               | LOCTN: _____ |
| Office of the Secretary | LOCTN: _____ |
| From: _____             | DATE: _____  |

TO: Victoria J. Tschinkel  
 FROM: Clair Fancy   
 DATE: May 2, 1986

SUBJECT: Modifications of Conditions

Attached for your approval and signature is a letter that will extend the expiration date of a construction permit for a phosphoric acid defluorination plant that was issued to AMAX Chemical Corporation. The expiration is to allow time for the new owners of AMAX to evaluate the need for the proposed phosphoric acid defluorination plant.

The Bureau recommends this extension be approved.

WH/ps

attach: Permit Modification letter

P 408 533 194

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED—  
NOT FOR INTERNATIONAL MAIL

(See Reverse)

|  |    |
|--|----|
| Sent to<br>Mr. Frank W. Cheesman                                 |    |
| Street and No.   |    |
| P.O., State and ZIP Code   |    |
| Postage  | \$ |
| Certified Fee  |    |
| Special Delivery Fee   |    |
| Restricted Delivery Fee  |    |
| Return Receipt Showing<br>to whom and Date Delivered             |    |
| Return Receipt Showing to whom,<br>Date, and Address of Delivery |    |
| TOTAL Postage and Fees   | \$ |
| Postmark or Date<br><br>5/7/86                                   |    |

PS Form 3800, Feb. 1982

State of Florida  
DEPARTMENT OF ENVIRONMENTAL REGULATION

**INTEROFFICE MEMORANDUM**

| For Routing To District Offices<br>And/Or To Other Than The Addressee |                    |                |
|---|--------------------|----------------|
| To: _____   | Loctn.: _____      |                |
| To: _____   | Loctn.: _____      |                |
| To: _____   | Loctn.: _____      |                |
| From: _____   | Date: _____        |                |
| Reply Optional [ ]  | Reply Required [ ] | Info. Only [ ] |
| Date Due: _____   | Date Due: _____    |                |

TO: Clair Fancy

FROM: Bill Thomas *WCT*

DATE: January 6, 1986

SUBJECT: AMAX Chemical Corporation, Permit No. AC29-091316  
Request for a Six (6) Month Extension

We have no problem with granting a six (6) month extention on the Defluorinated Acid Scrubber construction permit as requested by AMAX Chemical Corporation.

WCT/js

DER  
JAN 10 1986  
BAQM

DEPARTMENT OF ENVIRONMENTAL REGULATION

**ROUTING AND  
TRANSMITTAL SLIP**

ACTION NO

ACTION DUE DATE

1. TO: (NAME, OFFICE, LOCATION)

*Clair Gandy*

Initial

Date

2.

*Tally*

Initial

Date

3.

Initial

Date

4.

Initial

Date

REMARKS:

INFORMATION

Review & Return

Review & File

Initial & Forward

DISPOSITION

Review & Respond

Prepare Response

For My Signature

For Your Signature

Let's Discuss

Set Up Meeting

Investigate & Report

Initial & Forward

Distribute

Concurrence

For Processing

Initial & Return

FROM:

*Bill Thomas*  
*Tpa*

DATE

PHONE

State of Florida  
DEPARTMENT OF ENVIRONMENTAL REGULATION



# Interoffice Memorandum

FOR ROUTING TO OTHER THAN THE ADDRESSEE

To: \_\_\_\_\_ LOCTN: \_\_\_\_\_  
To: \_\_\_\_\_ LOCTN: \_\_\_\_\_  
To: \_\_\_\_\_ LOCTN: \_\_\_\_\_  
FROM: \_\_\_\_\_ DATE: \_\_\_\_\_

TO: Victoria J. Tschinkel  
FROM: *JF* Clair Fancy *BT*  
DATE: August 2, 1985  
SUBJ: AMAX Chemical Corporation

Attached is the Final Determination and Permit to Construct No. AC 29-091316 which approves the construction of a phosphoric acid defluorination plant at AMAX Chemical Corporation's Plant City, Hillsborough County, Florida facility. Public Notice of the department's intent to issue the permit was published in The Tampa Tribune on June 25, 1985. No comments were submitted on the proposed permit.

The bureau recommended your approval and signature of the construction permit and BACT. Day 90, after which the permit would be issued by default, is October 5, 1985.

CHF/WH/s

RECEIVED  
AUG 2 1985

Office of the Secretary

BAQM  
AUG 06 1985  
DER

P 085 152 631

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED  
NOT FOR INTERNATIONAL MAIL

(See Reverse)

★ U.S.G.P.O. 1984-446-014

PS Form 3800, Feb. 1982

|   |    |
|---|----|
| Sent to<br>Mr. George Townsend                                |    |
| Street and No.  |    |
| P.O., State and ZIP Code                                      |    |
| Postage   | \$ |
| Certified Fee   |    |
| Special Delivery Fee  |    |
| Restricted Delivery Fee                                       |    |
| Return Receipt Showing to whom and Date Delivered             |    |
| Return receipt showing to whom, Date, and Address of Delivery |    |
| TOTAL Postage and Fees  | \$ |
| Postmark or Date<br>8/7/85                                    |    |

PS Form 3811, July 1983

● SENDER: Complete items 1, 2, 3 and 4.

Put your address in the "RETURN TO" space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check boxes for service(s) requested.

1.  Show to whom, date and address of delivery  
2.  Restricted Delivery.

3. Article Addressed to:  
Mr. George Townsend  
AMAX Chemical Corp.  
P. O. Drawer 790  
Plant City, FL 33566

|   |                |
|---|----------------|
| 4. Type of Service:   | Article Number |
| <input type="checkbox"/> Registered <input type="checkbox"/> Insured<br><input checked="" type="checkbox"/> Certified <input type="checkbox"/> COD<br><input type="checkbox"/> Express Mail | P 085 152 631  |

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature - Addressee  
X Donald D. Lloyd

6. Signature - Agent  
X

7. Date of Delivery  
8/12/85

8. Addressee's Address (ONLY if requested and fee paid)  
7594

DEF  
AUG 14 1985  
BAQM

DOMESTIC RETURN RECEIPT

STATE OF FLORIDA  
DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING  
2600 BLAIR STONE ROAD  
TALLAHASSEE, FLORIDA 32301-8241



BOB GRAHAM  
GOVERNOR

VICTORIA J. TSCHINKEL  
SECRETARY

STATE OF FLORIDA  
DEPARTMENT OF ENVIRONMENTAL REGULATION  
NOTICE OF PERMIT

Mr. George Townsend  
Environmental Supervisor  
AMAX Chemical Corporation  
P. O. Drawer 790  
Plant City, Florida 33566

August 6, 1985

Enclosed is Permit Number AC 29-091316 to AMAX Chemical Corporation for the construction of a phosphoric acid defluorination plant, issued pursuant to Section 403, Florida Statutes.

Any Party to this permit has the right to seek judicial review of the permit pursuant to Section 120.68, Florida Statutes, by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the clerk of the Department in the Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32301; and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within 30 days from the date this permit is filed with the clerk of the Department.

Sincerely,

C. H. Fancy, P.E.  
Deputy Chief  
Bureau of Air Quality  
Management

Enclosure

cc: Steve Gyrog  
Bill Thomas



CERTIFICATION

This is to certify that the foregoing Notice of Permit and all copies requested were mailed before the close of business on August 7, 1985.



C. H. Fancy, P.E.  
Deputy Chief  
Bureau of Air Quality  
Management  
2600 Blair Stone Road  
Tallahassee, Florida 32301

Final Determination

AMAX Chemical Corporation  
Plant City, Florida  
Hillsborough County

Phosphoric Acid Defluorination Plant

Permit Number:  
AC 29-091316

Florida Department of Environmental Regulation  
Bureau of Air Quality Management  
Central Air Permitting

August 2, 1985

Final Determination  
AMAX Chemical Corporation  
AC 29-091316

The Technical Evaluation and Preliminary Determination for the proposed phosphoric acid defluorination plant was distributed on June 6, 1985. Copies of the evaluation were available for public inspection at the county and district office in Tampa and the Bureau of Air Quality Management in Tallahassee. The Notice of Proposed Agency Action on the permit application was published in The Tampa Tribune on June 25, 1985.

No comments on the department's intent to issue the permit were received. The final action of the department will be to issue the permit to construct as proposed in the Technical Evaluation and Preliminary Determination.

STATE OF FLORIDA  
DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING  
2600 BLAIR STONE ROAD  
TALLAHASSEE, FLORIDA 32301-8241



BOB GRAHAM  
GOVERNOR

VICTORIA J. TSCHINKEL  
SECRETARY

**PERMITTEE:**  
AMAX Chemical Corporation  
P.O. Box 790  
Plant City, Florida 34289

Permit Number: AC29-091316  
Expiration Date: December 31, 1985  
County: Hillsborough  
Latitude/Longitude: 27° 59' 21" N/  
82° 04' 48" W  
Project: Phosphoric Acid  
Defluorination Plant

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Rule(s) 17-2 and 17-4. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans, and other documents attached hereto or on file with the department and made a part hereof and specifically described as follows:

For the construction of a 172 TPD P<sub>2</sub>O<sub>5</sub> batch phosphoric acid defluorination plant consisting of one Kennite slurry mixer, two 12 foot diameter (12,000 gallon) acid reaction tanks, and a 3,000 ACFM Model 4837 Rigidome upflow, counter-current scrubber equipped with a Beco pad demister that uses well water to reduce particulate matter and fluoride emissions.

The UTM coordinates of the site are Zone 17, 393.8 Km East and 3096.3 Km North.

Construction shall be in accordance with the application for permit to construct a Phosphoric Acid Defluorinating Plant with Upflow, Counter-Current Scrubber that was signed by Mr. J.J. Lewis on December 27, 1984, and the additional information submitted by the applicant in the letters dated December 18, 1984, and March 7, 1985, except for the changes listed as specific conditions in this permit.

**Attachments are as follows:**

1. Application.
2. DER's letter, dated 9/7/84.
3. Applicant's letter, dated 12/18/84.
4. DER's letter, dated 1/28/85.
5. Applicant's letter, dated 3/7/85.
6. Applicant's letter, dated 4/5/85.

PERMITTEE:  
AMAX Chemical Corporation

Permit Number: AC29-091316  
Expiration Date: December 31, 1985

**GENERAL CONDITIONS:**

1. The terms, conditions, requirements, limitations, and restrictions set forth herein are "Permit Conditions" and as such are binding upon the permittee and enforceable pursuant to the authority of Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is hereby placed on notice that the department will review this permit periodically and may initiate enforcement action for any violation of the "Permit Conditions" by the permittee, its agents, employees, servants or representatives.
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. Nor 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 does not constitute 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, plant or aquatic life or property and penalties therefore caused by the construction or operation of this permitted source, 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.

PERMITTEE:  
AMAX Chemical Corporation

Permit Number: AC29-091316  
Expiration Date: December 31, 1985

GENERAL CONDITIONS:

6. The permittee shall at all times 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 credentials or other documents as may be required by law, access to the premises, at reasonable times, where the permitted activity is located or conducted for the purpose of:

- a. Having access to and copying any records that must be kept under the conditions of the permit;
- b. Inspecting the facility, equipment, practices, or operations regulated or required under this permit; and
- c. Sampling or monitoring 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 notify and provide the department with the following information:

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

PERMITTEE:  
AMAX Chemical Corporation

Permit Number: AC29-091316  
Expiration Date: December 31, 1985

**GENERAL CONDITIONS:**

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 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 arising under the Florida Statutes or department rules, except where such use is proscribed by Sections 403.73 and 403.111, Florida Statutes.

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 17-4.12 and 17-30.30, 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 is required to be kept at the work site of the permitted activity during the entire period of construction or operation.

13. This permit also constitutes:

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

14. The permittee shall comply with the following monitoring and record keeping requirements:

- a. Upon request, the permittee shall furnish all records and plans required under department rules. The retention period for all records will be extended automatically, unless otherwise stipulated by the department, during the course of any unresolved enforcement action.

PERMITTEE:  
AMAX Chemical Corporation

Permit Number: AC29-091316  
Expiration Date: December 31, 1985

**GENERAL CONDITIONS:**

- b. The permittee shall retain 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), copies of all reports required by this permit, and records of all data used to complete the application for this permit. The time period of retention shall be 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 date(s) 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 submitted or corrected promptly.

**SPECIFIC CONDITIONS:**

1. Not more than 48,000 gallons of phosphoric acid will be treated in one day without prior approval of the Southwest District.
2. Production shall be limited to 8 hr/day, 5 day/wk, and 52 wk/yr, unless prior approval is obtained from the Southwest District.



PERMITTEE:  
AMAX Chemical Corporation

Permit Number: AC29-091316  
Expiration Date: December 31, 1985

SPECIFIC CONDITIONS:

3. Total fluoride emissions shall not exceed 0.44 lb/hr and the quantity determined by the following formula:

$$\text{Allowable fluoride emissions (lb/hr)} = \frac{0.02 \text{ (Actual tons of P}_2\text{O}_5 \text{ per batch)}}{\text{(time in hours per batch)}}$$

Compliance tests will be conducted during the first three hours of a batch (24,000 gallons) by Method 13B (Appendix A of 40 CFR 60) as described in the BACT determination.

4. Scrubber parameters (gas pressure drop, scrubber water pressure, and flow) shall be monitored during the compliance tests and a summary of the parameters shall be included in the test report.

5. Particulate matter emissions shall not exceed 0.015 grains per DSCF as determined by Method 5 (Appendix A of 40 CFR 60). After the initial compliance tests, the Southwest District may waive periodic compliance tests for particulate matter if the visible emissions from the scrubber, as determined by Method 9 which is described in Appendix A of 40 CFR 60, are less than 5 percent opacity.

6. The applicant shall submit a complete application for a permit to operate the phosphoric acid defluorination plant, which will include an emissions test report, to the Hillsborough County Environmental Protection Commission at least 90 days prior to the expiration date of this construction permit. The company may continue to operate this plant if the emissions are in compliance with the permit conditions.

7. Upon obtaining a permit to operate, the company will be required to submit annual operation reports to the Hillsborough County Environmental Protection Commission.

FILING AND ACKNOWLEDGEMENT

FILED, on this date, pursuant to S120.52 (9), Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

*Sharon J. Clark*      8/5/85  
Clerk                              Date

Issued this 2 day of August,  
1985.

STATE OF FLORIDA DEPARTMENT  
OF ENVIRONMENTAL REGULATION

*Victoria J. Tschinkel*  
VICTORIA J. TSCHINKEL, Secretary

\_\_\_\_\_ pages attached.

Best Available Control Technology (BACT) Determination  
AMAX Chemical Corporation  
Hillsborough County

The applicant plans to construct a phosphoric acid defluorination plant at their facility located near Plant City, Florida. The process involves reacting phosphoric acid with a diatomaceous earth slurry and a caustic solution followed by sparging with compressed air and steam. The mechanics of the reaction produce fluoride compounds as a wasted gaseous overhead effluent and a precipitated by-product. The defluorination plant will have two primary reactors, each with an approximate processing time of four hours. The defluorination plant is scheduled to operate on an eight hour day, five day per week basis.

Fluoride compounds emitted to the atmosphere from the proposed defluorination plant are regulated air pollutants, Table 500-2, Rule 17-2.500. The maximum amount of fluoride compounds allowed to discharge to the atmosphere is to be determined by a BACT review as set forth in the Florida Administrative Code Rule 17-2.600(3)(a)9. - Emission Limiting and Performance Standards.

BACT Requested by the Applicant:

Fluoride emissions will not exceed 0.04 lb/ton of P<sub>2</sub>O<sub>5</sub> input.

Date of Receipt of a BACT Application:

December 13, 1984

Date of Publication in the Florida Administrative Weekly:

February 1, 1985

Review Group Members:

The determination was based upon comments received from the Stationary Source Control Section, the Southwest District Office, and the Hillsborough County Environmental Protection Commission.

BACT Determined by DER:

Fluorides (water soluble or gaseous atomic weight 19) shall not exceed 0.02 pounds per ton of P<sub>2</sub>O<sub>5</sub> input averaged over the first 3 hours of one normal defluorination plant operation.

Compliance with the fluoride standard will be determined using test Method 13B as specified in 40 CFR Part 60, Appendix A. One normal defluorination plant operation is defined to mean that period beginning when the first reaction vessel sparging cycle is

started followed immediately by the preparation and addition of the diatomaceous earth slurry to the second reaction vessel and subsequent sparging. The maximum time delay between the start of the two sparging cycles shall not exceed 1.5 hours.

BACT Determination Rationale:

The proposed defluorination plant will consist of two primary reaction vessels and one diatomaceous earth slurry tank. The typical reaction vessel charge is 12,000 gallons of phosphoric acid or 43 tons of P<sub>2</sub>O<sub>5</sub>. A specific quantity of diatomaceous earth slurry is prepared and added to one of the reaction vessels containing the phosphoric acid. The charged vessel is then sparged with air and steam until the defluorination process is complete. A second batch of diatomaceous earth slurry is quickly prepared and added to the second reaction vessel and the sparging process activated. There is approximately a 1-2 hour interval when only one vessel is in the sparging mode. The completion of two charges is defined as a batch.

The rate of fluoride emissions will peak shortly after start of the second reaction vessel sparging cycle. Compliance testing must be done when both reaction vessels are in different processing stages of defluorination. The performance test must be the average of three runs, the first run to start when the first reaction vessel sparge cycle begins. The second run must include the preparation and addition of the diatomaceous earth slurry to the second reaction vessel and the sparge cycle activated. The third run is to start when the sparging cycle of the second reaction vessel is activated. Each test run must be completed during that respective portion of the batch, as described, to be valid. Each sample run may be on a separate batch of acid.

The applicant's data indicates that the maximum hourly fluoride loading in the defluorination plant gaseous effluent will be 0.37 pounds per ton of P<sub>2</sub>O<sub>5</sub> charged. The fluoride emission limit judged to be BACT is 0.02 pounds per ton of P<sub>2</sub>O<sub>5</sub> charged. An emission control system that will remove 94.6 percent of the fluorides from the gaseous effluent will be required.

$$\frac{0.37 - 0.02}{0.37} = 0.946 \times 100 = 94.6\%$$

The proposed fluoride emission control device, according to the applicant's data, will remove 99 percent of the fluoride vapors produced by the defluorination process. The fluoride emission limit determined as BACT is judged to be reasonable and will allow for variations in the P<sub>2</sub>O<sub>5</sub> content of the phosphoric acid feed stock.

Details of the Analysis May be Obtained by Contacting:

Edward Palagyi, BACT Coordinator  
Department of Environmental Regulation  
Bureau of Air Quality Management  
2600 Blair Stone Road  
Tallahassee, Florida 32301

Recommended by:

*Mr. H. Fancy*

*for* H. Fancy, Deputy Bureau Chief

Date:

*8/2/85*

Approved by:

*Victoria J. Tschinkel*

Victoria J. Tschinkel, Secretary

Date:

*8/2/85*

# AMAX Chemical Corporation

A SUBSIDIARY OF AMAX INC.

P. O. BOX 790 ♦ PLANT CITY, FLORIDA 34289 ♦ (813) 752-1161

July 1, 1985

DER  
JUL 8 1985  
BAQM


Mr. C. H. Fancy  
Bureau of Air Quality Management  
Department of Environmental Regulation  
Twin Towers Office Building  
2600 Blair Stone Road  
Tallahassee, Fl 32301-8241

Dear Mr. Fancy:

Please find attached an affidavit and a copy of a public notice concerning file number AC29-091316.

Should you have any questions concerning the attached notice, please let me know.

Sincerely,



George Townsend  
Environmental Supervisor

GT:cr

Attachment

cc: Bill Thomas, DER  
Steve Gyorog, HCEPC  
F. W. Cheesman  
G. P. Ubelhoer

**THE TAMPA TRIBUNE**  
 Published Daily  
 Tampa, Hillsborough County, Florida

State of Florida }  
 County of Hillsborough } ss.

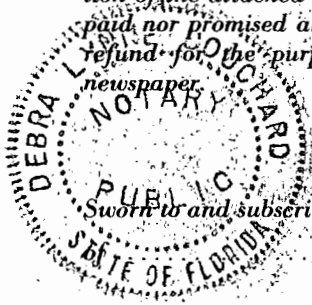
Before the undersigned authority personally appeared  
 G. T. Gleason, who on oath says that he is Controller of The Tampa Tribune, a daily  
 newspaper published at Tampa in Hillsborough County, Florida; that the attached copy  
 of advertisement being a .....

LEGAL NOTICE

in the matter of ..... Notice of Proposed Agency Action

was published in said newspaper in the issues of .....  
 -----June 25, 1985-----

Affiant further says that the said The Tampa Tribune is a newspaper published at  
 Tampa, in said Hillsborough County, Florida, and that the said newspaper has  
 heretofore been continuously published in said Hillsborough County, Florida, each day  
 and has been entered as second class mail matter at the post office in Tampa, in said  
 Hillsborough County, Florida, for a period of one year next preceding the first publica-  
 tion of the attached copy of advertisement; and affiant further says that he has neither  
 paid nor promised any person, firm, or corporation any discount, rebate, commission or  
 refund for the purpose of securing this advertisement for publication in the said  
 newspaper.



*G. T. Gleason*

Sworn to and subscribed before me, this 25th ..... day  
 June ..... A.D. 19 85  
*Debra L. Pouchard*  
 Notary Public, State of Florida

My Commission Expires Jan. 6, 1989  
 Bonded Thru Troy Fein - Insurance, Inc.

(SEAL)

DEBRA  
 JUL 8 1985  
 BAQM

State of Florida  
 Department of  
 Environmental Regulation  
 Notice of Proposed  
 Agency Action  
 on Permit Application

The Department of Environmental Regulation gives notice of its intent to issue a permit to AMAX Chemical Corporation to construct a phosphoric acid defluorination plant at their phosphate chemical complex located on Coronet Road in Plant City, Hillsborough County, Florida. A determination of best available control technology (BACT) was required.

Persons 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. The petition must conform to the requirements of Chapters 17-103 and 28-5, Florida Administrative Code, and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Twin Towers Office Building, Tallahassee, Florida 32301, within fourteen (14) days of publication of this notice. Failure to file a request for hearing 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, Florida Statutes.

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 preliminary statement. Therefore, persons who may not object to the proposed agency action may wish to intervene in the proceeding. A petition for intervention must be filed pursuant to Model Rule 28-5.207 at least five (5) days before the final hearing and be filed with the hearing officer if one has been assigned at the Division of Administrative Hearings, Department of Administration, 2009, Apalachee Parkway, Tallahassee, Florida 32301. If no hearing officer has been assigned, the petition is to be filed with the Department's Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32301. Failure to petition to intervene within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, Florida Statutes.

2796 6/25/85

Main File Copy

STATE OF FLORIDA  
DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING  
2600 BLAIR STONE ROAD  
TALLAHASSEE, FLORIDA 32301-8241



BOB GRAHAM  
GOVERNOR  
VICTORIA J. TSCHINKEL  
SECRETARY

June 6, 1985

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Mr. George Townsend, Environmental Supervisor  
AMAX Chemical Corporation  
P.O. Drawer 790  
Plant City, Florida 33566

Dear Mr. Townsend:

Attached is one copy of the revised pages for the Technical Evaluation and Preliminary Determination, and proposed permit to construct a phosphoric acid defluorination plant at your Plant city, Hillsborough County, phosphate chemical complex. Please substitute these pages for the original ones that were in the Technical Evaluation and Preliminary Determination that was mailed to you on April 26, 1985.

Before final action can be taken on your draft permit, you are required by Florida Administrative Code Rule 17-103.150 to publish the attached Notice of Proposed Agency Action in the legal advertising section of a newspaper of general circulation in Hillsborough County no later than fourteen days after receipt of this letter. The department must be provided with proof of publication within seven days of the date the notice is published. Failure to publish the notice may be grounds for denial of the permit.

Please submit, in writing, any comments which you wish to have considered concerning the department's proposed action to Mr. Bill Thomas of the Bureau of Air Quality Management.

Sincerely,

C. H. Fancy, P.E.  
Deputy Chief  
Bureau of Air Quality  
Management

CHF/rw

Attachments

cc: Steve Gyrog ✓  
Bill Thomas ✓  
Reading File ✓  
Willard Hawks ✓

No. 0155572

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED—  
NOT FOR INTERNATIONAL MAIL  
(See Reverse)

|                             |   |  |   |
|-----------------------------|---|--|---|
| SENT TO                     |   | George Townsend  |   |
| STREET AND NO.              |   | P.O. Box 790   |   |
| P.O., STATE AND ZIP CODE    |   | Plant City, FL 34289                                     |   |
| POSTAGE                     |   | \$   |   |
| CONSULT POSTMASTER FOR FEES | CERTIFIED FEE   | ¢  |   |
|                             | SPECIAL DELIVERY  | ¢  |   |
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|                             |   | SHOW TO WHOM, DATE, AND ADDRESS OF DELIVERY              | ¢ |
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| RETURN RECEIPT SERVICE      | SHOW TO WHOM, DATE AND ADDRESS OF DELIVERY WITH RESTRICTED DELIVERY | ¢  |   |
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PS Form 3800, Apr. 1976

PS Form 3811, July 1983

**SENDER: Complete items 1, 2, 3 and 4.**

Put your address in the "RETURN TO" space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for service(s) requested.

- Show to whom, date and address of delivery.
- Restricted Delivery.

3. Article Addressed to:  
Mr. George Townsend  
AMAX Chemical Company  
P.O. Box 790  
Plant City, FL 34289

|   |                |
|---|----------------|
| 4. Type of Service:   | Article Number |
| <input type="checkbox"/> Registered <input type="checkbox"/> Insured<br><input checked="" type="checkbox"/> Certified <input type="checkbox"/> COD<br><input type="checkbox"/> Express Mail | 0155572        |

Always obtain signature of addressee or agent and **DATE DELIVERED.**

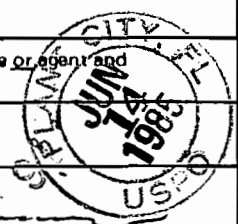
5. Signature - Addressee:  
X

6. Signature - Agent:  
*William D. ...*

7. Date of Delivery:  
6/14/85

8. Addressee's Address (ONLY if requested and fee paid):  
361 W. Reynolds St.  
(P.O.) 95-71

DOMESTIC RETURN RECEIPT





BEFORE THE STATE OF FLORIDA  
DEPARTMENT OF ENVIRONMENTAL REGULATION

In the Matter of an )  
Application for Permit by: )  
 )  
AMAX Chemical Corporation )  
Post Office Box 790 ) DER File No. AC 29-091316  
Plant City, Florida 33566 )  
 )  
 )

INTENT TO ISSUE

The Department of Environmental Regulation hereby gives notice of its Intent to Issue and proposed order of issuance for a permit pursuant to Chapter 403, Florida Statutes, for the proposed project as detailed in the application specified above. The Department is issuing this Intent to Issue for the reasons stated in the attached Technical Evaluation and Preliminary Determination.

The applicant, AMAX Chemical Corporation, applied on January 11, 1985, to the Department of Environmental Regulation for a permit to construct a phosphoric acid defluorination plant at their phosphate chemical complex located on Coronet Road in Plant City, Hillsborough County, Florida.

The Department has permitting jurisdiction under Chapter 403, Florida Statutes and Florida Administrative Code Rules 17-2 and 17-4. The project is not exempt from permitting procedures. The applicant was officially notified by the Department that an air construction permit was required for the proposed work.

This intent to issue shall be placed before the Secretary for final action unless an appropriate petition for a hearing pursuant to the provisions of Section 120.57, Florida Statutes, is filed within fourteen (14) days from receipt of this letter or

publication of the public notice (copy attached) required pursuant to Rule 17-103.150, Florida Administrative Code, whichever occurs first. The petition must comply with the requirements of Section 17-103.155 and Rule 28-5.201, Florida Administrative Code (copy attached) and be filed pursuant to Rule 17-103.155(1) in the Office of General Counsel of the Department of Environmental Regulation at 2600 Blair Stone Road, Tallahassee, Florida 32301.

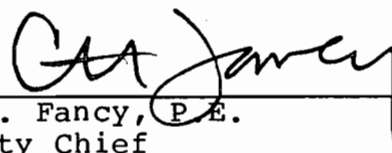
Petitions which are not filed in accordance with the above provisions are subject to dismissal by the Department. In the event a formal hearing is conducted pursuant to Section 120.57(1), all parties shall have an opportunity to respond, to present evidence and argument on all issues involved, to conduct cross-examination of witnesses and submit rebuttal evidence, to submit proposed findings of facts and orders, to file exceptions to any order or hearing officer's recommended order, and to be represented by counsel. If an informal hearing is requested, the agency, in accordance with its rules of procedure, will provide affected persons or parties or their counsel an opportunity, at a convenient time and place, to present to the agency or hearing officer, written or oral evidence in opposition to the agency's action or refusal to act, or a written statement challenging the grounds upon which the agency has chosen to justify its action or inaction, pursuant to Section 120.57(2), Florida Statutes.

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 proposed agency action. Therefore, persons who may not wish to file a petition, may wish to intervene in the proceeding. A petition for intervention must be filed pursuant to Model Rule 28-5.207 at least five (5) days before the final hearing and be filed with the hearing officer if one has been assigned at the Division of

Administrative Hearings, 2009 Apalachee Parkway, Tallahassee, Florida 32301. If no hearing officer has been assigned, the petition is to be filed with the Department's Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32301. Failure to petition to intervene within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, Florida Statutes.

Executed the 6 day of JUNE, 1985, in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT  
OF ENVIRONMENTAL REGULATION



C. H. Fancy, P.E.  
Deputy Chief  
Bureau of Air Quality  
Management

Copies furnished to:

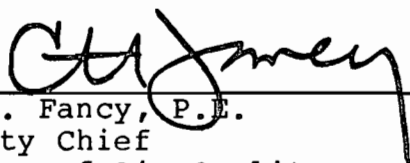
Mr. Steve Gyrog  
Hillsborough County Environmental  
Protection Commission  
1900 9th Avenue  
Tampa, Florida 33605

Mr. Bill Thomas  
Department of Environmental Regulation  
Southwest District  
7601 Highway 301 North  
Tampa, Florida 33610

Mr. George Townsend  
Environmental Supervisor  
AMAX Chemical Corporation  
P.O. Drawer 790  
Plant City, Florida 33566

CERTIFICATION

This is to certify that the foregoing Intent to Issue and all copies were mailed before the close of business on 7 June, 1985.

  
C. H. Fancy, P.E.  
Deputy Chief  
Bureau of Air Quality  
Management  
2600 Blair Stone Road  
Tallahassee, Florida 32301

FILING AND ACKNOWLEDGEMENT  
FILED, on this date, pursuant to  
§120.52(9), Florida Statutes, with  
the designated Department Clerk,  
receipt of which is hereby acknow-  
ledged.

  
Clerk      6/10/85  
Date

State of Florida  
Department of Environmental Regulation  
Notice of Proposed Agency Action  
on Permit Application

The Department of Environmental Regulation gives notice of its intent to issue a permit to AMAX Chemical Corporation to construct a phosphoric acid defluorination plant at their phosphate chemical complex located on Coronet Road in Plant City, Hillsborough County, Florida. A determination of best available control technology (BACT) was required.

Persons 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. The petition must conform to the requirements of Chapters 17-103 and 28-5, Florida Administrative Code, and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Twin Towers Office Building, Tallahassee, Florida 32301, within fourteen (14) days of publication of this notice. Failure to file a request for hearing 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, Florida Statutes.

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 preliminary statement. Therefore, persons who may not object to the proposed agency action may wish to intervene in the proceeding. A petition for intervention must be filed pursuant to Model Rule 28-5.207 at least five (5) days before the final hearing and be filed with the hearing officer if one has been assigned at the Division of Administrative Hearings, Department of Administration, 2009, Apalachee Parkway, Tallahassee, Florida 32301. If no hearing officer has been assigned, the petition is to be filed with the Department's Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32301. Failure to petition to intervene within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, Florida Statutes.

## I. Project Description

### A. Applicant

AMAX Chemical Corporation  
P.O. Box 790  
Plant City, Florida 34289

### B. Project and Location

The company submitted an application for a permit to construct a phosphoric acid defluorination plant (SIC 2048) to the department on January 11, 1985. The information furnished in a letter dated March 7, 1985, (received March 11, 1985) provided enough data for the department to process the application.

The defluorination plant consists of two 12,000 gallon reactor tanks, one diatomaceous earth slurry mixer tank, a 3,000 ACFM Rigidome upflow, counter current scrubber, and associated process equipment. It will be located at the applicant's existing phosphate chemical plant on Coronet Road in Plant City, Hillsborough County, Florida. The UTM coordinates of this site are 17, 393.8 Km East and 3096.3 Km North.

### C. Process and Emissions

A diatomaceous earth slurry and caustic solution are added to each 12,000 gallon tank of heated phosphoric acid (50% P<sub>2</sub>O<sub>5</sub>) and the mixture is sparged with air and steam. Some of the fluoride compounds in the mixture are precipitated and settle in the tank during the 4 hour batch operation. The precipitate is then pumped to another process. Some of the fluoride compounds are stripped from the phosphoric acid and carried off with the air used to sparge the mixture to the upflow counter current scrubber. Approximately 1,000 ACFM will be drawn from each reaction tank and the slurry mixer tank for a total of 3,000 ACFM. The scrubber handles 3,000 ACFM and uses well water to remove the pollutants.

Company test data shows that the air coming from the reaction tanks and going to the scrubber will contain 1.825 grains of fluoride per cubic foot. A gas flow of 2,000 ACFM (1,000 ACFM for each reaction tank) will contain 31.3 lb F/hr.

The department has reviewed this process and concluded that the best available control technology (BACT) determination should be 0.02 lb F/ton P<sub>2</sub>O<sub>5</sub> avg. which is equivalent to 0.44 lb F/hr being discharged from the scrubber to the atmosphere. The scrubber will have to be 94.6 percent efficient to meet this standard. The company has stated that the Model 4837 Rigidome scrubber they propose to use is over 99 percent efficient in removing fluorides.

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING  
2600 BLAIR STONE ROAD  
TALLAHASSEE, FLORIDA 32301-8241



BOB GRAHAM  
GOVERNOR

VICTORIA J. TSCHINKEL  
SECRETARY

**PERMITTEE:**  
AMAX Chemical Corporation  
P.O. Box 790  
Plant City, Florida 34289

Permit Number: AC29-091316  
Expiration Date: December 31, 1985  
County: Hillsborough  
Latitude/Longitude: 27° 59' 21" N/  
82° 04' 48" W  
Project: Phosphoric Acid  
Defluorination Plant

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Rule(s) 17-2 and 17-4. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans, and other documents attached hereto or on file with the department and made a part hereof and specifically described as follows:

For the construction of a 172 TPD P<sub>2</sub>O<sub>5</sub> batch phosphoric acid defluorination plant consisting of one Kennite slurry mixer, two 12 foot diameter (12,000 gallon) acid reaction tanks, and a 3,000 ACFM Model 4837 Rigidome upflow, counter-current scrubber equipped with a Beco pad demister that uses well water to reduce particulate matter and fluoride emissions.

The UTM coordinates of the site are Zone 17, 393.8 Km East and 3096.3 Km North.

Construction shall be in accordance with the application for permit to construct a Phosphoric Acid Defluorinating Plant with Upflow, Counter-Current Scrubber that was signed by Mr. J.J. Lewis on December 27, 1984, and the additional information submitted by the applicant in the letters dated December 18, 1984, and March 7, 1985, except for the changes listed as specific conditions in this permit.

**Attachments are as follows:**

1. Application.
2. DER's letter, dated 9/7/84.
3. Applicant's letter, dated 12/18/84.
4. DER's letter, dated 1/28/85.
5. Applicant's letter, dated 3/7/85.
6. Applicant's letter, dated 4/5/85.

PERMITTEE:  
AMAX Chemical Corporation

Permit Number: AC29-091316  
Expiration Date: December 31, 1985

**GENERAL CONDITIONS:**

1. The terms, conditions, requirements, limitations, and restrictions set forth herein are "Permit Conditions" and as such are binding upon the permittee and enforceable pursuant to the authority of Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is hereby placed on notice that the department will review this permit periodically and may initiate enforcement action for any violation of the "Permit Conditions" by the permittee, its agents, employees, servants or representatives.

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. Nor 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 does not constitute 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, plant or aquatic life or property and penalties therefore caused by the construction or operation of this permitted source, 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.



PERMITTEE:  
AMAX Chemical Corporation

Permit Number: AC29-091316  
Expiration Date: December 31, 1985

**GENERAL CONDITIONS:**

6. The permittee shall at all times 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 credentials or other documents as may be required by law, access to the premises, at reasonable times, where the permitted activity is located or conducted for the purpose of:

- a. Having access to and copying any records that must be kept under the conditions of the permit;
- b. Inspecting the facility, equipment, practices, or operations regulated or required under this permit; and
- c. Sampling or monitoring 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 notify and provide the department with the following information:

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

PERMITTEE:  
AMAX Chemical Corporation

Permit Number: AC29-091316  
Expiration Date: December 31, 1985

**GENERAL CONDITIONS:**

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 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 arising under the Florida Statutes or department rules, except where such use is proscribed by Sections 403.73 and 403.111, Florida Statutes.

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 17-4.12 and 17-30.30, 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 is required to be kept at the work site of the permitted activity during the entire period of construction or operation.

13. This permit also constitutes:

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

14. The permittee shall comply with the following monitoring and record keeping requirements:

- a. Upon request, the permittee shall furnish all records and plans required under department rules. The retention period for all records will be extended automatically, unless otherwise stipulated by the department, during the course of any unresolved enforcement action.

PERMITTEE:  
AMAX Chemical Corporation

Permit Number: AC29-091316  
Expiration Date: December 31, 1985

**GENERAL CONDITIONS:**

- b. The permittee shall retain 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), copies of all reports required by this permit, and records of all data used to complete the application for this permit. The time period of retention shall be 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 date(s) 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 submitted or corrected promptly.

**SPECIFIC CONDITIONS:**

1. Not more than 48,000 gallons of phosphoric acid will be treated in one day without prior approval of the Southwest District.
2. Production shall be limited to 8 hr/day, 5 day/wk, and 52 wk/yr, unless prior approval is obtained from the Southwest District.

PERMITTEE:  
AMAX Chemical Corporation

Permit Number: AC29-091316  
Expiration Date: December 31, 1985

**SPECIFIC CONDITIONS:**

3. Total fluoride emissions shall not exceed 0.44 lb/hr and the quantity determined by the following formula:

$$\text{Allowable fluoride emissions (lb/hr)} = \frac{0.02 \text{ (Actual tons of P}_2\text{O}_5 \text{ per batch)}}{\text{(time in hours per batch)}}$$

Compliance tests will be conducted during the first three hours of a batch (24,000 gallons) by Method 13B (Appendix A of 40 CFR 60) as described in the BACT determination.

4. Scrubber parameters (gas pressure drop, scrubber water pressure, and flow) shall be monitored during the compliance tests and a summary of the parameters shall be included in the test report.

5. Particulate matter emissions shall not exceed 0.015 grains per DSCF as determined by Method 5 (Appendix A of 40 CFR 60). After the initial compliance tests, the Southwest District may waive periodic compliance tests for particulate matter if the visible emissions from the scrubber, as determined by Method 9 which is described in Appendix A of 40 CFR 60, are less than 5 percent opacity.

6. The applicant shall submit a complete application for a permit to operate the phosphoric acid defluorination plant, which will include an emissions test report, to the Hillsborough County Environmental Protection Commission at least 90 days prior to the expiration date of this construction permit. The company may continue to operate this plant if the emissions are in compliance with the permit conditions.

7. Upon obtaining a permit to operate, the company will be required to submit annual operation reports to the Hillsborough County Environmental Protection Commission.

Issued this \_\_\_\_\_ day of \_\_\_\_\_,  
19\_\_\_\_.

STATE OF FLORIDA DEPARTMENT  
OF ENVIRONMENTAL REGULATION

\_\_\_\_\_  
VICTORIA J. TSCHINKEL, Secretary

\_\_\_\_\_ pages attached.

Best Available Control Technology (BACT) Determination  
AMAX Chemical Corporation  
Hillsborough County

The applicant plans to construct a phosphoric acid defluorination plant at their facility located near Plant City, Florida. The process involves reacting phosphoric acid with a diatomaceous earth slurry and a caustic solution followed by sparging with compressed air and steam. The mechanics of the reaction produce fluoride compounds as a wasted gaseous overhead effluent and a precipitated by-product. The defluorination plant will have two primary reactors, each with an approximate processing time of four hours. The defluorination plant is scheduled to operate on an eight hour day, five day per week basis.

Fluoride compounds emitted to the atmosphere from the proposed defluorination plant are regulated air pollutants, Table 500-2, Rule 17-2.500. The maximum amount of fluoride compounds allowed to discharge to the atmosphere is to be determined by a BACT review as set forth in the Florida Administrative Code Rule 17-2.600(3)(a)9. - Emission Limiting and Performance Standards.

BACT Requested by the Applicant:

Fluoride emissions will not exceed 0.04 lb/ton of P<sub>2</sub>O<sub>5</sub> input.

Date of Receipt of a BACT Application:

December 13, 1984

Date of Publication in the Florida Administrative Weekly:

February 1, 1985

Review Group Members:

The determination was based upon comments received from the Stationary Source Control Section, the Southwest District Office, and the Hillsborough County Environmental Protection Commission.

BACT Determined by DER:

Fluorides (water soluble or gaseous atomic weight 19) shall not exceed 0.02 pounds per ton of P<sub>2</sub>O<sub>5</sub> input averaged over the first 3 hours of one normal defluorination plant operation.

Compliance with the fluoride standard will be determined using test Method 13B as specified in 40 CFR Part 60, Appendix A. One normal defluorination plant operation is defined to mean that period beginning when the first reaction vessel sparging cycle is

STATE OF FLORIDA  
DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING  
2600 BLAIR STONE ROAD  
TALLAHASSEE, FLORIDA 32301-8241



BOB GRAHAM  
GOVERNOR

VICTORIA J. TSCHINKEL  
SECRETARY

April 22, 1985

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Mr. J.J. Lewis  
Plant Manager  
Ward Industries, Inc.  
P.O. Drawer 790  
Plant City, Florida 33566

Dear Mr. Lewis:

Attached is one copy of the Technical Evaluation and Preliminary Determination, and proposed permit to construct a phosphoric acid defluorination plant at your Plant city, Hillsborough County, phosphate chemical complex.

Before final action can be taken on your draft permit, you are required by Florida Administrative Code Rule 17-103.150 to publish the attached Notice of Proposed Agency Action in the legal advertising section of a newspaper of general circulation in Hillsborough County no later than fourteen days after receipt of this letter. The department must be provided with proof of publication within seven days of the date the notice is published. Failure to publish the notice may be grounds for denial of the permit.

Please submit, in writing, any comments which you wish to have considered concerning the department's proposed action to Mr. Bill Thomas of the Bureau of Air Quality Management.

Sincerely,

*Willard Hanks*  
for C. H. Fancy, P.E.  
Deputy Chief  
Bureau of Air Quality  
Management

CHF/rw  
Attachments  
cc: Steve Gyorog  
George Townsend  
Bill Thomas

No. **0155552**

**RECEIPT FOR CERTIFIED MAIL**  
**NO INSURANCE COVERAGE PROVIDED—**  
**NOT FOR INTERNATIONAL MAIL**  
 (See Reverse)

|  |   |   |
|--|---|---|
| SENT TO<br><b>Mr. J. J. Lewis</b>  |   |   |
| STREET AND NO.   |   |   |
| P.O., STATE AND ZIP CODE   |   |   |
| POSTAGE  | \$  |   |
| CONSULT POSTMASTER FOR FEES<br><br>OPTIONAL SERVICES<br><br>RETURN RECEIPT SERVICE | CERTIFIED FEE   | ¢ |
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|  | RESTRICTED DELIVERY   | ¢ |
|  | SHOW TO WHOM AND DATE DELIVERED                                     | ¢ |
|  | SHOW TO WHOM, DATE, AND ADDRESS OF DELIVERY                         | ¢ |
|  | SHOW TO WHOM AND DATE DELIVERED WITH RESTRICTED DELIVERY            | ¢ |
|  | SHOW TO WHOM, DATE AND ADDRESS OF DELIVERY WITH RESTRICTED DELIVERY | ¢ |
| TOTAL POSTAGE AND FEES   | \$  |   |
| POSTMARK OR DATE<br><br><b>4/26/85</b>   |   |   |

PS Form 3800, Apr. 1976

Form 3811, July 1983

Complete items 1, 2, 3 and 4.

Failure to do this will prevent this card from being returned to you. The return receipt fee will provide proof of the person, date and the date of delivery.

For additional information, the following services are available. Consult postmaster for fees and check box(es) requested.

How to whom, date and address of delivery.

Certified Delivery

Addressed to:  
**J. J. Lewis**  
**Industries, Inc.**  
**Drawer 790**  
**City, FL 33566**

Service:  Insured  COD  Mail

Article Number: **015555**

Signature of addressee or agent and address of delivery.

Address: \_\_\_\_\_

Agent: \_\_\_\_\_

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DOMESTIC RETURN RECEIPT

APR 29 1985

BEFORE THE STATE OF FLORIDA  
DEPARTMENT OF ENVIRONMENTAL REGULATION

In the Matter of an )  
Application for Permit by: )  
 )  
Ward Industries, Inc. )  
Post Office Box 790 ) DER File No. AC 29-091316  
Plant City, Florida 33566 )  
 )  
 )

INTENT TO ISSUE

The Department of Environmental Regulation hereby gives notice of its Intent to Issue and proposed order of issuance for a permit pursuant to Chapter 403, Florida Statutes, for the proposed project as detailed in the application specified above. The Department is issuing this Intent to Issue for the reasons stated in the attached Technical Evaluation and Preliminary Determination.

The applicant, Ward Industries, Inc. (formerly AMAX Chemical Corporation) applied on January 11, 1985, to the Department of Environmental Regulation for a permit to construct a phosphoric acid defluorination plant at their phosphate chemical complex located on Coronet Road in Plant City, Hillsborough County, Florida.

The Department has permitting jurisdiction under Chapter 403, Florida Statutes and Florida Administrative Code Rules 17-2 and 17-4. The project is not exempt from permitting procedures. The applicant was officially notified by the Department that an air construction permit was required for the proposed work.

This intent to issue shall be placed before the Secretary for final action unless an appropriate petition for a hearing pursuant to the provisions of Section 120.57, Florida Statutes, is filed within fourteen (14) days from receipt of this letter or



publication of the public notice (copy attached) required pursuant to Rule 17-103.150, Florida Administrative Code, whichever occurs first. The petition must comply with the requirements of Section 17-103.155 and Rule 28-5.201, Florida Administrative Code (copy attached) and be filed pursuant to Rule 17-103.155(1) in the Office of General Counsel of the Department of Environmental Regulation at 2600 Blair Stone Road, Tallahassee, Florida 32301.

Petitions which are not filed in accordance with the above provisions are subject to dismissal by the Department. In the event a formal hearing is conducted pursuant to Section 120.57(1), all parties shall have an opportunity to respond, to present evidence and argument on all issues involved, to conduct cross-examination of witnesses and submit rebuttal evidence, to submit proposed findings of facts and orders, to file exceptions to any order or hearing officer's recommended order, and to be represented by counsel. If an informal hearing is requested, the agency, in accordance with its rules of procedure, will provide affected persons or parties or their counsel an opportunity, at a convenient time and place, to present to the agency or hearing officer, written or oral evidence in opposition to the agency's action or refusal to act, or a written statement challenging the grounds upon which the agency has chosen to justify its action or inaction, pursuant to Section 120.57(2), Florida Statutes.

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 proposed agency action. Therefore, persons who may not wish to file a petition, may wish to intervene in the proceeding. A petition for intervention must be filed pursuant to Model Rule 28-5.207 at least five (5) days before the final hearing and be filed with the hearing officer if one has been assigned at the Division of

Administrative Hearings, 2009 Apalachee Parkway, Tallahassee, Florida 32301. If no hearing officer has been assigned, the petition is to be filed with the Department's Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32301. Failure to petition to intervene within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, Florida Statutes.

Executed the 26 day of April, 1985, in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT  
OF ENVIRONMENTAL REGULATION

for William M. Stankis  
C. H. Fancy, P.E.  
Deputy Chief  
Bureau of Air Quality  
Management

Copies furnished to:

Mr. J. J. Lewis  
Plant Manager  
Ward Industries, Inc.  
P. O. Drawer 790  
Plant City, Florida 33566

Mr. Steve Gyrog  
Hillsborough County Environmental  
Protection Commission  
1900 9th Avenue  
Tampa, Florida 33605

Mr. Bill Thomas  
Department of Environmental Regulation  
Southwest District  
7601 Highway 301 North  
Tampa, Florida 33610

Mr. George Townsend  
Environmental Supervisor  
Ward Industries, Inc.  
P.O. Drawer 790  
Plant City, Florida 33566

CERTIFICATION

This is to certify that the foregoing Intent to Issue and all copies were mailed before the close of business on April 26, 1985.

*Willard M. Hanks*  
for C. H. Fancy, P.E.  
Deputy Chief  
Bureau of Air Quality  
Management  
2600 Blair Stone Road  
Tallahassee, Florida 32301

FILING AND ACKNOWLEDGEMENT  
FILED, on this date, pursuant to  
§120.52(9), Florida Statutes, with  
the designated Department Clerk,  
receipt of which is hereby acknow-  
ledged.

*Patricia G. Adams* 4/20/85  
Clerk Date

Technical Evaluation  
and  
Preliminary Determination

Ward Industries, Inc.  
(Formerly AMAX Chemical Corporation)  
Plant City, Florida  
Hillsborough County

Phosphoric Acid Defluorination Plant

Permit Number:  
AC 29-091316

Florida Department of Environmental Regulation  
Bureau of Air Quality Management  
Central Air Permitting  
April 19, 1985

State of Florida  
Department of Environmental Regulation  
Notice of Proposed Agency Action on Permit Application

The Department of Environmental Regulation gives notice of its intent to issue a permit to Ward Industries, Inc. (formerly AMAX Chemical Corporation) to construct a phosphoric acid defluorination plant at their phosphate chemical complex located on Coronet Road in Plant City, Hillsborough County, Florida. A determination of best available control technology (BACT) was required.

Persons 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. The petition must conform to the requirements of Chapters 17-103 and 28-5, Florida Administrative Code, and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Twin Towers Office Building, Tallahassee, Florida 32301, within fourteen (14) days of publication of this notice. Failure to file a request for hearing within this time period constitutes a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, Florida Statutes.

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 proposed agency action. Therefore, persons who may not wish to file a petition may wish to intervene in the proceeding. A petition for intervention must be filed pursuant to Model Rule 28-5.207, Florida Administrative Code, at least five (5) days before the final hearing and be filed with the hearing officer if one has been assigned at the Division of Administrative Hearings, Department of Administration, 2009, Apalachee Parkway, Tallahassee, Florida 32301. If no hearing officer has been assigned, the petition is to be filed with the department's Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32301. Failure to petition to intervene within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, Florida Statutes.

The application 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:

Dept. of Environmental Regulation  
Southwest District  
7601 Highway 301 North  
Tampa, Florida 33610

Hillsborough County Environmental Protection Commission  
1900 Ninth Avenue  
Tampa, Florida 33605

Dept. of Environmental Regulation  
Bureau of Air Quality Management  
2600 Blair Stone Road  
Tallahassee, Florida 32301

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

RULES OF THE ADMINISTRATIVE COMMISSION  
MODEL RULES OF PROCEDURE  
CHAPTER 28-5  
DECISIONS DETERMINING SUBSTANTIAL INTERESTS

28-5.15 Requests for Formal and Informal Proceedings

- (1) Requests for proceedings shall be made by petition to the agency involved. Each petition shall be printed typewritten or otherwise duplicated in legible form on white paper of standard legal size. Unless printed, the impression shall be on one side of the paper only and lines shall be double spaced and indented.
- (2) All petitions filed under these rules should contain:
  - (a) The name and address of each agency affected and each agency's file or identification number, if known;
  - (b) The name and address of the petitioner or petitioners;
  - (c) All disputed issues of material fact. If there are none, the petition must so indicate;
  - (d) A concise statement of the ultimate facts alleged, and the rules, regulations and constitutional provisions which entitle the petitioner to relief;
  - (e) A statement summarizing any informal action taken to resolve the issues, and the results of that action;
  - (f) A demand for the relief to which the petitioner deems himself entitled; and
  - (g) Such other information which the petitioner contends is material.

## I. Project Description

### A. Applicant

Ward Industries, Inc.  
(Formerly AMAX Chemical Corporation)  
P.O. Box 790  
Plant City, Florida 34289

### B. Project and Location

The company submitted an application for a permit to construct a phosphoric acid defluorination plant (SIC 2048) to the department on January 11, 1985. The information furnished in a letter dated March 7, 1985, (received March 11, 1985) provided enough data for the department to process the application.

The defluorination plant consists of two 12,000 gallon reactor tanks, one diatomaceous earth slurry mixer tank, a 3,000 ACFM Rigidome upflow, counter current scrubber, and associated process equipment. It will be located at the applicant's existing phosphate chemical plant on Coronet Road in Plant City, Hillsborough County, Florida. The UTM coordinates of this site are 17, 393.8 Km East and 3096.3 Km North.

### C. Process and Emissions

A diatomaceous earth slurry and caustic solution are added to each 12,000 gallon tank of heated phosphoric acid (50% P<sub>2</sub>O<sub>5</sub>) and the mixture is sparged with air and steam. Some of the fluoride compounds in the mixture are precipitated and settle in the tank during the 4 hour batch operation. The precipitate is then pumped to another process. Some of the fluoride compounds are stripped from the phosphoric acid and carried off with the air used to sparge the mixture to the upflow counter current scrubber. Approximately 1,000 ACFM will be drawn from each reaction tank and the slurry mixer tank for a total of 3,000 ACFM. The scrubber handles 3,000 ACFM and uses well water to remove the pollutants.

Company test data shows that the air coming from the reaction tanks and going to the scrubber will contain 1.825 grains of fluoride per cubic foot. A gas flow of 2,000 ACFM (1,000 ACFM for each reaction tank) will contain 31.3 lb F/hr.

The department has reviewed this process and concluded that the best available control technology (BACT) determination should be 0.02 lb F/ton P<sub>2</sub>O<sub>5</sub> avg. which is equivalent to 0.44 lb F/hr being discharged from the scrubber to the atmosphere. The scrubber will have to be 94.6 percent efficient to meet this standard. The company has stated that the Model 4837 Rigidome scrubber they propose to use is over 99 percent efficient in removing fluorides.



More details of this analysis are given in the BACT determination that is included in the appendix.

The primary source of the particulate matter emissions is the slurring of the diatomaceous earth. Uncontrolled particulate matter emissions from the slurry mixer tank will be 3.6 lb/hr. Based on their experience with a similar scrubber, the company estimates the maximum particulate matter emissions from the Rigidome scrubber will be 0.015 grains per ACF. A flow of 3,000 ACFM from the scrubber would contain approximately 0.39 lb/hr of particulate matter. The scrubber will have to be 89+ percent efficient in removing particulate matter to meet this standard.

## II. Rule Applicability

The proposed project, construction of a phosphoric acid defluorination plant, is subject to preconstruction review under the provisions of Chapter 403, FS, and Chapter 17-2, FAC.

The proposed facility will be located in an area designated: nonattainment for ozone, (17-2.410[1][f]); unclassifiable for sulfur dioxide (17-2.430[2][c]); and attainment for the other criteria air pollutants (17-2.420). It is in the area of influence (17-2.100[14]) of the Hillsborough County particulate matter nonattainment area (17-2.410[2]).

The existing plant is a major facility for particulate matter because potential emissions of this pollutant exceed 100 TPY. The proposed project is not subject to Prevention of Significant Deterioration regulations (17-2.500) or New Source Review for Nonattainment Area regulations (17-2.510) because its emissions are less than the significant rates for particulate matter and fluorides listed in Table 500-2 and will have a de minimus ambient impact on the particulate matter nonattainment area (Table 500-3).

The project is subject to review under Rule 17-2.520, FAC, Sources Not Subject to Prevention of Significant Deterioration or Nonattainment Requirements. The allowable fluoride emissions standard shall be established by a best available control technology (BACT) determination as required by Rule 17-2.600(3)(a)9, FAC. The particulate matter emissions standard shall be set at the value requested by the applicant. A higher emissions rate could subject the project to the RACT regulations.

## III. Technical Evaluation

The phosphoric acid defluorination plant will be a batch operation. Approximately 4 hours are required to defluorinate each 24,000 gallon batch of acid. Particulate matter emissions

will occur when the diatomaceous earth is placed in the slurry mix. Fluoride emissions will be the highest at the start of the steam/air sparging and taper off toward the end of the batch operation. Half of the fluoride compounds removed is precipitated and settles by gravity from the phosphoric acid solution. The other half is carried off in the air where it is removed in a 99 percent efficient Model 4837 Rigidome spray chamber scrubber. The maximum fluoride emissions, based on the BACT determination, are 0.44 lb/hr. Based on the data supplied in the application, a 94.6 percent efficient scrubber can meet this standard.

The particulate matter standard proposed by the applicant is 0.015 grain/ACF. Based on their experience with similar scrubbers, the applicant believes the proposed scrubber will meet this standard. The department has accepted this standard because higher particulate matter emissions could subject the application to review under the RACT regulations.

The following table summarizes the allowable emissions from the proposed phosphoric acid defluorination plant.

| Pollutant          | Emission Rate                                | Maximum Emissions |      | Comment  |
|--------------------|--|-------------------|------|--|
|                    |  | lb/hr             | TPY  |  |
| Particulate matter | 0.015 gr/ACF                                 | 0.39              | 0.41 | Alt. Std. 5% opacity specified                                   |
| Fluoride           | 0.02 lb/TP <sub>2</sub> O <sub>5</sub> in/hr | 0.44              | 0.46 | Max. emission based on avg. P <sub>2</sub> O <sub>5</sub> /batch |

#### IV. Air Quality Impact

Screening modeling was used to determine the maximum ambient air quality impact of the emissions from the proposed plant. The results are summarized below.

| Pollutant          | Max. 1 hr. impact      | Max. 24 hr. impact    | Comment                         |
|--------------------|------------------------|-----------------------|---------------------------------|
| Fluoride           | 16.5 ug/m <sup>3</sup> | 2.2 ug/m <sup>3</sup> | 2,500 ug/m <sup>3</sup> TWA*    |
| Particulate matter | 15.3 ug/m <sup>3</sup> | 2.0 ug/m <sup>3</sup> | 10 ug/m <sup>3</sup> de minimus |

\*Time Weighted Average threshold limit value.

Therefore, the estimated emissions from the proposed project are too low to have a significant impact on the ambient air quality.

## V. Conclusion

Based on the information submitted by the applicant in their application dated August 6, 1984, and in their letters dated December 18, 1984, March 7, 1985, and April 5, 1985, the department has concluded that the phosphoric acid defluorination plant can be built and operated in compliance with all state and local air pollution control regulations. The department proposes to issue a permit to construct this plant. The General and Specific Conditions listed in the proposed permit (attached) will assure compliance of the source with the air pollution control regulations.

STATE OF FLORIDA  
DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING  
2600 BLAIR STONE ROAD  
TALLAHASSEE, FLORIDA 32301-8241



BOB GRAHAM  
GOVERNOR

VICTORIA J. TSCHINKEL  
SECRETARY

**PERMITTEE:**  
Ward Industries, Inc.  
P.O. Box 790  
Plant City, Florida 34289

Permit Number: AC29-091316  
Expiration Date: December 31, 1985  
County: Hillsborough  
Latitude/Longitude: 27° 59' 21" N/  
82° 04' 48" W  
Project: Phosphoric Acid  
Defluorination Plant

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Rule(s) 17-2 and 17-4. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans, and other documents attached hereto or on file with the department and made a part hereof and specifically described as follows:

For the construction of a 172 TPD P<sub>2</sub>O<sub>5</sub> batch phosphoric acid defluorination plant consisting of one Kennite slurry mixer, two 12 foot diameter (12,000 gallon) acid reaction tanks, and a 3,000 ACFM Model 4837 Rigidome upflow, counter-current scrubber equipped with a Beco pad demister that uses well water to reduce particulate matter and fluoride emissions.

The UTM coordinates of the site are Zone 17, 393.8 Km East and 3096.3 Km North.

Construction shall be in accordance with the application for permit to construct a Phosphoric Acid Defluorinating Plant with Upflow, Counter-Current Scrubber that was signed by Mr. J.J. Lewis on December 27, 1984, and the additional information submitted by the applicant in the letters dated December 18, 1984, and March 7, 1985, except for the changes listed as specific conditions in this permit.

**Attachments are as follows:**

1. Application.
2. DER's letter, dated 9/7/84.
3. Applicant's letter, dated 12/18/84.
4. DER's letter, dated 1/28/85.
5. Applicant's letter, dated 3/7/85.
6. Applicant's letter, dated 4/5/85.

**PERMITTEE:**  
Ward Industries, Inc.

**Permit Number:** AC29-091316  
**Expiration Date:** December 31, 1985

**GENERAL CONDITIONS:**

1. The terms, conditions, requirements, limitations, and restrictions set forth herein are "Permit Conditions" and as such are binding upon the permittee and enforceable pursuant to the authority of Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is hereby placed on notice that the department will review this permit periodically and may initiate enforcement action for any violation of the "Permit Conditions" by the permittee, its agents, employees, servants or representatives.

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. Nor 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 does not constitute 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, plant or aquatic life or property and penalties therefore caused by the construction or operation of this permitted source, 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.

**PERMITTEE:**  
Ward Industries, Inc.

**Permit Number:** AC29-091316  
**Expiration Date:** December 31, 1985

**GENERAL CONDITIONS:**

6. The permittee shall at all times 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 credentials or other documents as may be required by law, access to the premises, at reasonable times, where the permitted activity is located or conducted for the purpose of:

- a. Having access to and copying any records that must be kept under the conditions of the permit;
- b. Inspecting the facility, equipment, practices, or operations regulated or required under this permit; and
- c. Sampling or monitoring 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 notify and provide the department with the following information:

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

PERMITTEE:  
Ward Industries, Inc.

Permit Number: AC29-091316  
Expiration Date: December 31, 1985

**GENERAL CONDITIONS:**

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 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 arising under the Florida Statutes or department rules, except where such use is proscribed by Sections 403.73 and 403.111, Florida Statutes.

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 17-4.12 and 17-30.30, 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 is required to be kept at the work site of the permitted activity during the entire period of construction or operation.

13. This permit also constitutes:

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

14. The permittee shall comply with the following monitoring and record keeping requirements:

- a. Upon request, the permittee shall furnish all records and plans required under department rules. The retention period for all records will be extended automatically, unless otherwise stipulated by the department, during the course of any unresolved enforcement action.

**PERMITTEE:**  
Ward Industries, Inc.

**Permit Number:** AC29-091316  
**Expiration Date:** December 31, 1985

**GENERAL CONDITIONS:**

- b. The permittee shall retain 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), copies of all reports required by this permit, and records of all data used to complete the application for this permit. The time period of retention shall be 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 date(s) 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 submitted or corrected promptly.

**SPECIFIC CONDITIONS:**

- 1. Not more than 48,000 gallons of phosphoric acid will be treated in one day without prior approval of the Southwest District.
- 2. Production shall be limited to 8 hr/day, 5 day/wk, and 52 wk/yr, unless prior approval is obtained from the Southwest District.



PERMITTEE:  
Ward Industries, Inc.

Permit Number: AC29-091316  
Expiration Date: December 31, 1985

**SPECIFIC CONDITIONS:**

3. Total fluoride emissions shall not exceed 0.44 lb/hr and the quantity determined by the following formula:

$$\text{Allowable fluoride emissions (lb/hr)} = \frac{0.02 \text{ (Actual tons of P}_2\text{O}_5 \text{ per batch)}}{\text{(time in hours per batch)}}$$

Compliance tests will be conducted during the first three hours of a batch (24,000 gallons) by Method 13B (Appendix A of 40 CFR 60) as described in the BACT determination.

4. Scrubber parameters (gas pressure drop, scrubber water pressure, and flow) shall be monitored during the compliance tests and a summary of the parameters shall be included in the test report.

5. Particulate matter emissions shall not exceed 0.015 grains per DSCF as determined by Method 5 (Appendix A of 40 CFR 60). After the initial compliance tests, the Southwest District may waive periodic compliance tests for particulate matter if the visible emissions from the scrubber, as determined by Method 9 which is described in Appendix A of 40 CFR 60, are less than 5 percent opacity.

6. The applicant shall submit a complete application for a permit to operate the phosphoric acid defluorination plant, which will include an emissions test report, to the Hillsborough County Environmental Protection Commission at least 90 days prior to the expiration date of this construction permit. The company may continue to operate this plant if the emissions are in compliance with the permit conditions.

7. Upon obtaining a permit to operate, the company will be required to submit annual operation reports to the Hillsborough County Environmental Protection Commission.

Issued this \_\_\_\_\_ day of \_\_\_\_\_,  
19\_\_\_\_.

**STATE OF FLORIDA DEPARTMENT  
OF ENVIRONMENTAL REGULATION**

\_\_\_\_\_  
VICTORIA J. TSCHINKEL, Secretary

\_\_\_\_\_ pages attached.

Best Available Control Technology (BACT) Determination  
Ward Industries, Inc.  
(Formerly AMAX Chemical Corporation)  
Hillsborough County

The applicant plans to construct a phosphoric acid defluorination plant at their facility located near Plant City, Florida. The process involves reacting phosphoric acid with a diatomaceous earth slurry and a caustic solution followed by sparging with compressed air and steam. The mechanics of the reaction produce fluoride compounds as a wasted gaseous overhead effluent and a precipitated by-product. The defluorination plant will have two primary reactors, each with an approximate processing time of four hours. The defluorination plant is scheduled to operate on an eight hour day, five day per week basis.

Fluoride compounds emitted to the atmosphere from the proposed defluorination plant are regulated air pollutants, Table 500-2, Rule 17-2.500. The maximum amount of fluoride compounds allowed to discharge to the atmosphere is to be determined by a BACT review as set forth in the Florida Administrative Code Rule 17-2.600(3)(a)9. - Emission Limiting and Performance Standards.

BACT Requested by the Applicant:

Fluoride emissions will not exceed 0.04 lb/ton of P<sub>2</sub>O<sub>5</sub> input.

Date of Receipt of a BACT Application:

December 13, 1984

Date of Publication in the Florida Administrative Weekly:

February 1, 1985

Review Group Members:

The determination was based upon comments received from the Stationary Source Control Section, the Southwest District Office, and the Hillsborough County Environmental Protection Commission.

BACT Determined by DER:

Fluorides (water soluble or gaseous atomic weight 19) shall not exceed 0.02 pounds per ton of P<sub>2</sub>O<sub>5</sub> input averaged over the first 3 hours of one normal defluorination plant operation.

Compliance with the fluoride standard will be determined using test Method 13B as specified in 40 CFR Part 60, Appendix A. One normal defluorination plant operation is defined to mean that period beginning when the first reaction vessel sparging cycle is

started followed immediately by the preparation and addition of the diatomaceous earth slurry to the second reaction vessel and subsequent sparging. The maximum time delay between the start of the two sparging cycles shall not exceed 1.5 hours.

BACT Determination Rationale:

The proposed defluorination plant will consist of two primary reaction vessels and one diatomaceous earth slurry tank. The typical reaction vessel charge is 12,000 gallons of phosphoric acid or 43 tons of P<sub>2</sub>O<sub>5</sub>. A specific quantity of diatomaceous earth slurry is prepared and added to one of the reaction vessels containing the phosphoric acid. The charged vessel is then sparged with air and steam until the defluorination process is complete. A second batch of diatomaceous earth slurry is quickly prepared and added to the second reaction vessel and the sparging process activated. There is approximately a 1-2 hour interval when only one vessel is in the sparging mode. The completion of two charges is defined as a batch.

The rate of fluoride emissions will peak shortly after start of the second reaction vessel sparging cycle. Compliance testing must be done when both reaction vessels are in different processing stages of defluorination. The performance test must be the average of three runs, the first run to start when the first reaction vessel sparge cycle begins. The second run must include the preparation and addition of the diatomaceous earth slurry to the second reaction vessel and the sparge cycle activated. The third run is to start when the sparging cycle of the second reaction vessel is activated. Each test run must be completed during that respective portion of the batch, as described, to be valid. Each sample run may be on a separate batch of acid.

The applicant's data indicates that the maximum hourly fluoride loading in the defluorination plant gaseous effluent will be 0.37 pounds per ton of P<sub>2</sub>O<sub>5</sub> charged. The fluoride emission limit judged to be BACT is 0.02 pounds per ton of P<sub>2</sub>O<sub>5</sub> charged. An emission control system that will remove 94.6 percent of the fluorides from the gaseous effluent will be required.

$$\frac{0.37 - 0.02}{0.37} = 0.946 \times 100 = 94.6\%$$

The proposed fluoride emission control device, according to the applicant's data, will remove 99 percent of the fluoride vapors produced by the defluorination process. The fluoride emission limit determined as BACT is judged to be reasonable and will allow for variations in the P<sub>2</sub>O<sub>5</sub> content of the phosphoric acid feed stock.

Details of the Analysis May be Obtained by Contacting:

Edward Palagyi, BACT Coordinator  
Department of Environmental Regulation  
Bureau of Air Quality Management  
2600 Blair Stone Road  
Tallahassee, Florida 32301

Recommended by:

\_\_\_\_\_  
C. H. Fancy, Deputy Bureau Chief

Date:\_\_\_\_\_

Approved by:

\_\_\_\_\_  
Victoria J. Tschinkel, Secretary

Date:\_\_\_\_\_

**AMAX** Chemical Corporation

A SUBSIDIARY OF AMAX INC.

P. O. BOX 790 ♦ PLANT CITY, FLORIDA 34289



Mr. C. H. Fancy, P.E.  
Bureau of Air Quality Management  
Department of Environmental Regulation  
Twin Towers Office Building  
2600 Blair Stone Road  
Tallahassee, FL 32301-8241

# AMAX Chemical Corporation

A SUBSIDIARY OF AMAX INC.

P. O. BOX 790 ♦ PLANT CITY, FLORIDA 34289 ♦ (813) 752-1161

December 16, 1985

DER

DEC 19 1985

BAQM

Mr. C. H. Fancy, P.E.  
Deputy Chief  
Bureau of Air Quality Management  
2600 Blair Stone Road  
Tallahassee, FL 32301

Dear Mr. Fancy:

We applied for and received a construction permit to install a Phosphoric Acid Defluorination Wet Scrubber; Permit No. AC 29-091316. However, due to the present depressed market and the recent loss of a potential contract with a significant user of defluorinated phosphoric acid, AMAX, at this time, is not willing to commit the necessary resources to complete this project. The proposed scrubber and the connecting duct work is on site and ready for installation when and if an affirmative decision is made to complete the project. We are not producing defluorinated phosphoric acid at this time and unless we are able to capture a share of the market for defluorinated phosphoric acid, there is no incentive for AMAX to produce defluorinated phosphoric acid. In light of the present circumstances, we are requesting a six (6) month extension on the Defluorinated Acid Scrubber construction permit. We feel this will give AMAX sufficient time to conduct market surveys and explore contractual agreements with the users of defluorinated phosphoric acid. With this information AMAX can make an informed decision on whether or not the potential for an adequate and timely return on the investment would warrant the completion of the project.

Should you have any questions or require additional information, please let me know. Your assistance in this matter would be greatly appreciated.

Sincerely,



George Townsend  
Environmental Supervisor

GT:tc

cc: Bill Thomas, DER  
Jerry Campbell, HCEPC  
F. W. Cheesman  
B. V. Galloway  
G. P. Uebelhoer

# AMAX Chemical Corporation

A SUBSIDIARY OF AMAX INC.

P. O. BOX 790 ♦ PLANT CITY, FLORIDA 34289 ♦ (813) 752-1161

April 5, 1985

Main File  
Copy  
DER  
APR 12 1985  
BAQM

Mr. C. H. Fancy, P.E.  
Bureau of Air Quality Management  
Department of Environmental Regulation  
Twin Towers Office Building  
2600 Blair Stone Road  
Tallahassee, FL 32301-8241

Dear Mr. Fancy:

In response to a request for additional information concerning file no. A029-091316, we are submitting the following:

1. The test data for fluoride removal from the phosphoric acid was gathered simply by determining, by analyses, the fluoride content of the acid at various stages of the defluorinating process. As referenced by Louis John Lamb to Joe Floyd; attachment F of the permit application, the maximum fluoride emissions occurred during a two hour period when the heated acid, diatomaceous earth, and caustic mixture was air sparged, worst case condition. Laboratory analysis of the acid before and after this two hour period indicated that 32.12 lbs. of fluorides had been removed. Each of the two reaction tanks will be swept with 1,025 ACFM during the defluorinating process. The 1.83 grains  $F_2/ft^3$  calculates as follows:

$$\frac{32.12 \text{ Lbs } F_2}{2 \text{ Hours}} \times \frac{1 \text{ Hour}}{60 \text{ Min.}} \times \frac{1 \text{ Minute}}{1025 \text{ Ft}^3} \times \frac{7000 \text{ Grains}}{1 \text{ Lb}} = \frac{1.83 \text{ Grains}}{\text{Ft}^3}$$

2. Approximately 95% of the sludge produced during the phosphoric acid defluorinating process is recovered and used in another manufacturing process. The remaining 5% may be sluiced to the process water system
3. The 99+% fluoride removal capability of the Rigidome 4837 scrubber is based on the phosphoric acid fluoride removal test data and the engineering data presented by Louis John Lamb. AMAX will investigate the use of packing in this scrubber if it is needed to meet the BACT for fluoride set forth in the operating permit.

Sincerely,

*George Townsend*

George Townsend  
Environmental Supervisor

GT:cr

cc: J. J. Lewis  
G. P. Ubelhoer

*Willard Hanks - 4/12/85*

DEPARTMENT OF ENVIRONMENTAL REGULATION

|                                     |         |                 |  |
|-------------------------------------|---------|-----------------|--|
| <b>ROUTING AND TRANSMITTAL SLIP</b> |         | ACTION NO       |  |
|                                     |         | ACTION DUE DATE |  |
| 1. TO (NAME, OFFICE, LOCATION)      | INITIAL | DATE            |  |
| <i>Chas</i> 1/16                    |         |                 |  |
| 2.                                  | INITIAL | DATE            |  |
| <i>Bill BT</i>                      |         |                 |  |
| 3.                                  | INITIAL | DATE            |  |
| <i>I assume Willard has copy</i>    |         |                 |  |
| 4.                                  | INITIAL | DATE            |  |
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REMARKS:  
*Incompleteness response  
 Return for file*

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| INFORMATION              |                      |
| <input type="checkbox"/> | REVIEW & RETURN      |
| <input type="checkbox"/> | REVIEW & FILE        |
| <input type="checkbox"/> | INITIAL & FORWARD    |
| DISPOSITION              |                      |
| <input type="checkbox"/> | REVIEW & RESPOND     |
| <input type="checkbox"/> | PREPARE RESPONSE     |
| <input type="checkbox"/> | FOR MY SIGNATURE     |
| <input type="checkbox"/> | FOR YOUR SIGNATURE   |
| <input type="checkbox"/> | LET'S DISCUSS        |
| <input type="checkbox"/> | SET UP MEETING       |
| <input type="checkbox"/> | INVESTIGATE & REPORT |
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| <input type="checkbox"/> | DISTRIBUTE           |
| <input type="checkbox"/> | CONCURRENCE          |
| <input type="checkbox"/> | FOR PROCESSING       |
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DM:  
*Patty*

DEPARTMENT OF ENVIRONMENTAL REGULATION

|                                     |         |                 |  |
|-------------------------------------|---------|-----------------|--|
| <b>ROUTING AND TRANSMITTAL SLIP</b> |         | ACTION NO       |  |
|                                     |         | ACTION DUE DATE |  |
| 1. TO: (NAME, OFFICE, LOCATION)     | INITIAL | DATE            |  |
| <i>Chas</i> 3/12                    |         |                 |  |
| 2.                                  | INITIAL | DATE            |  |
| <i>Bill</i> 3/13                    |         |                 |  |
| 3.                                  | INITIAL | DATE            |  |
|                                     |         |                 |  |
| 4.                                  | INITIAL | DATE            |  |
|                                     |         |                 |  |

REMARKS:  
*Incompleteness response  
 Willard has copy -  
 Please return for file*

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| INFORMATION              |                   |
| <input type="checkbox"/> | Review & Return   |
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| DISPOSITION              |                      |
| <input type="checkbox"/> | Review & Respond     |
| <input type="checkbox"/> | Prepare Response     |
| <input type="checkbox"/> | For My Signature     |
| <input type="checkbox"/> | For Your Signature   |
| <input type="checkbox"/> | Let's Discuss        |
| <input type="checkbox"/> | Set Up Meeting       |
| <input type="checkbox"/> | Investigate & Report |
| <input type="checkbox"/> | Initial & Forward    |
| <input type="checkbox"/> | Distribute           |
| <input type="checkbox"/> | Concurrence          |
| <input type="checkbox"/> | For Processing       |
| <input type="checkbox"/> | Initial & Return     |

FROM:  
*Patty*

DATE  
 3/11  
 PHONE



# AMAX Chemical Corporation

A SUBSIDIARY OF AMAX INC.

P. O. BOX 790 ♦ PLANT CITY, FLORIDA 34289 ♦ (813) 752-1161

March 7, 1985

DER  
MAR 11 1985  
BAQM

Mr. C. H. Fancy, P.E.  
Bureau of Air Quality Management  
Florida Department of Environmental Regulation  
Twin Towers Office Building  
2600 Blair Stone Road  
Tallahassee, FL 32301-8241

Dear Mr. Fancy:

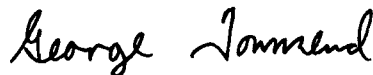
In response to the letter of incompleteness, dated January 28, 1985, concerning file no. A029-091316, we are submitting the following. The responses are in the order the questions were presented.

1. For a clarification of drawing D-1, please see Attachment A of this letter. The process vessels in the phosphoric acid defluorinating area are also shown in Attachment A.
2. There is only one diatomaceous earth (D.E.) slurry tank.
3. We feel that a 180 day period from the date of issuance would be sufficient time to complete the project.
4. To clarify the statement referred to in section II: A, it should have read: Maximum particulate emissions occur during the slurring of the D.E. This slurring takes place only in the D.E. slurry tank, not in the acid tanks. The D.E. slurry is prepared using fresh water. The slurring of D.E. would take place for approximately  $\frac{1}{2}$  hour twice a day.
5. The D.E. slurry tank discharges into one of the first 12,000 gallon acid tanks, and while the first defluorination tank is being sparged the D.E. slurry tank is refilled and then dumps into the second 12,000 gallon acid tank.
6. See Attachment B (section VI of the permit application).

7. The basis of Mr. Lamb's calculations of 1.825 gr/ft<sup>3</sup> of fluoride was the amount of total fluoride removed during an actual defluorinating cycle. Although Mr. Lamb's final fluoride determination is labeled lbs. HF/hr., it is in fact total fluoride which includes HF and SiF<sub>4</sub>. The reactions between the phosphoric acid, caustic solution, diatomaceous earth (86% SiO<sub>2</sub>-0.6% CaO), and the fluoride contaminants are as follows:
1.  $H_3PO_4 + NaOH \rightarrow 2H_2O + SiF_4$
  2.  $4HF + SiO_2 \rightarrow 2H_2O + SiF_4$
  3.  $3SiF_4 + 2H_2O \rightarrow 2H_2SiF_6 + SiO_2$
  4.  $H_2SiF_6 + 2NaOH \rightarrow Na_2SiF_6 + 2H_2O$
8. The feed prep acid storage, dikal acid storage, and dikal and sales acid storage tanks and all tanks shown in Attachment A are existing tanks.
9. Precipitated fluoride compounds are removed from the acid by gravity settling. Nearly all of the precipitated sludge is pumped to the feed prep plant and used in the manufacturing process. However, a small percentage may be sluiced to the holding ponds.
10. The proposed scrubber will not recirculate water. The holding pond system is more than adequate, some 350 acres, to contain the potential 20,000 tons of water. If during the rainy season pond volumes require it, we are permitted under EPA-NPDES and DER-Industrial Wastewater permits to discharge treated process water.
11. Fluoride emissions are based on actual test data of the total amount of fluoride removed during the defluorination of one tank of phosphoric acid. The total amount of fluoride removed was then equated to the airflow of 1,000 SCFM.
12. The correct stack diameter is 1.33' and the correct velocity is 35.81 FPS.

Should you have any questions concerning the information provided, please call me at (813) 752-1161.

Sincerely,

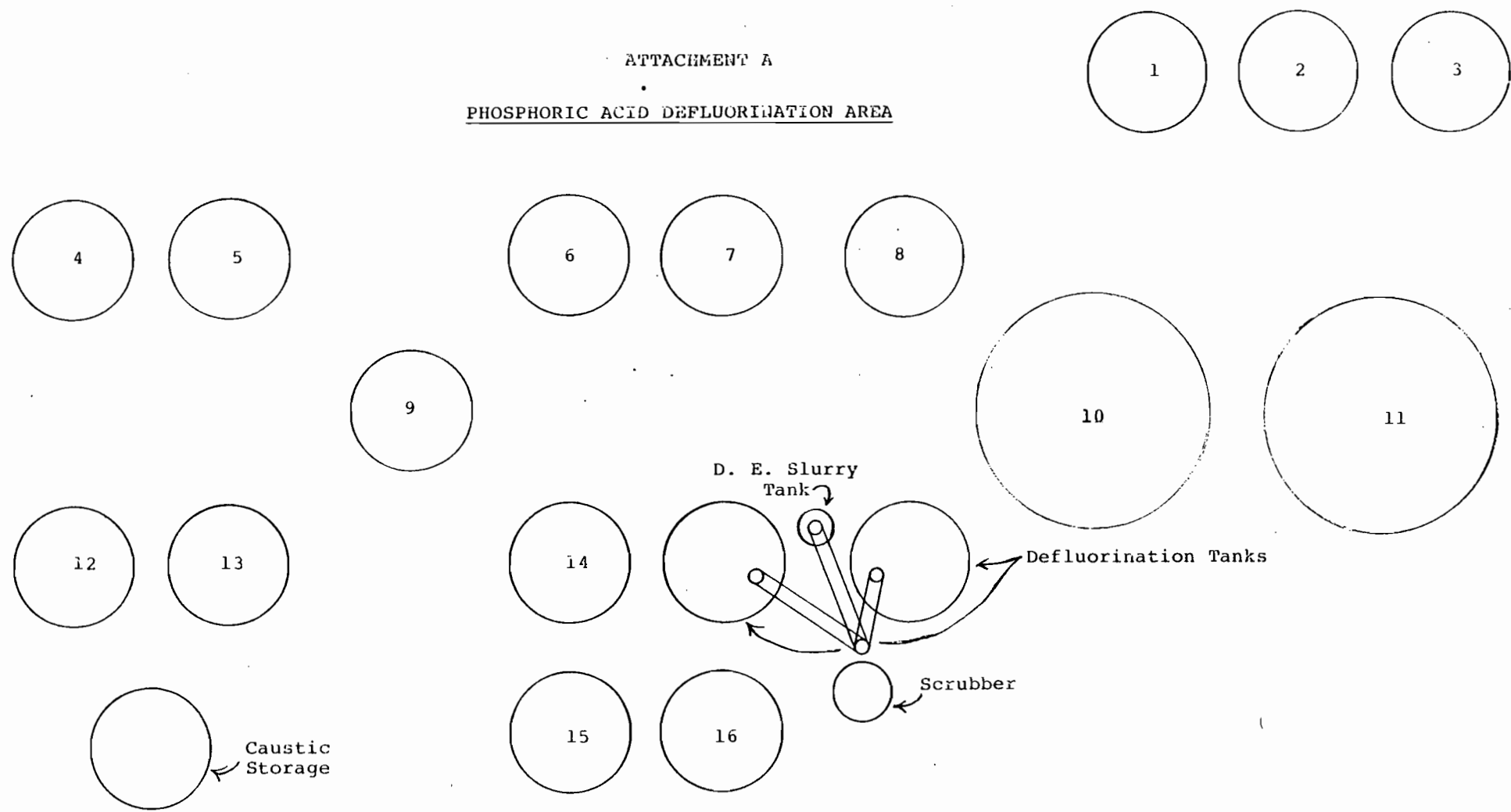


George Townsend  
Environmental Supervisor

GT:cr

cc: Bill Thomas, DER  
Steve Gyrog, HCEPC  
J. J. Lewis  
F. G. Mullins

ATTACHMENT A  
PHOSPHORIC ACID DEFLUORINATION AREA



Tanks 1-16 are acid storage tanks

- 9. An application fee of \$20, unless exempted by Section 17-4.05(3), F.A.C. The check should be made payable to the Department of Environmental Regulation.
- 10. With an application for operation permit, attach a Certificate of Completion of Construction indicating that the source was constructed as shown in the construction permit.

**SECTION VI: BEST AVAILABLE CONTROL TECHNOLOGY**

A. Are standards of performance for new stationary sources pursuant to 40 C.F.R. Part 60 applicable to the source?  
 Yes    No

| Contaminant | Rate or Concentration         |
|-------------|-------------------------------|
| Fluoride    | 3.650 Grains/ft. <sup>3</sup> |
| Particulate | 0.42 Grains/ft. <sup>3</sup>  |
|             |                               |
|             |                               |

B. Has EPA declared the best available control technology for this class of sources (If yes, attach copy)    Yes    No

| Contaminant  | Rate or Concentration |
|--|-----------------------|
| The state of Florida has declared BACT for a similar source. |                       |
|  |                       |
|  |                       |
|  |                       |

C. What emission levels do you propose as best available control technology?

| Contaminant | Rate or Concentration |
|-------------|-----------------------|
| Fluoride    | 0.86 lbs./hr.         |
| Particulate | 0.39 Lbs./Hr.         |
|             |                       |
|             |                       |

D. Describe the existing control and treatment technology (if any).

- |                           |                      |
|---------------------------|----------------------|
| 1. Control Device/System: | 4. Capital Costs:    |
| 2. Operating Principles:  | 6. Operating Costs:  |
| 3. Efficiency: *          | 8. Maintenance Cost: |
| 5. Useful Life:           |                      |
| 7. Energy:                |                      |
| 9. Emissions:             |                      |

| Contaminant | Rate or Concentration |
|-------------|-----------------------|
|             |                       |
|             |                       |
|             |                       |
|             |                       |

\*Explain method of determining D 3 above.

10. Stack Parameters

- |               |      |                 |     |
|---------------|------|-----------------|-----|
| a. Height:    | ft.  | b. Diameter:    | ft. |
| c. Flow Rate: | ACFM | d. Temperature: | °F  |
| e. Velocity:  | FPS  |                 |     |

E. Describe the control and treatment technology available (As many types as applicable, use additional pages if necessary).

1.

- a. **Control Device:** Packed Bed Scrubber
- b. **Operating Principles:** Mass Transfer/Particle Collection
- c. **Efficiency\*:** 98+
- d. **Capital Cost:** \$24,000
- e. **Useful Life:** 20 Years
- f. **Operating Cost:** \$8,186
- g. **Energy\*:** 10 KWH
- h. **Maintenance Cost:** \$3,030/year
- i. **Availability of construction materials and process chemicals:**  
Package scrubbers are available through various manufacturers.
- j. **Applicability to manufacturing processes:** Compatible with process
- k. **Ability to construct with control device, install in available space, and operate within proposed levels:**  
The available space is limited; for horizontal configuration.

2.

- a. **Control Device:** Venturi
- b. **Operating Principles:** Mass Transfer/Particle Collection
- c. **Efficiency\*:** 98+
- d. **Capital Cost:** \$46,000
- e. **Useful Life:** 20 Years
- f. **Operating Cost:** \$8,423/year
- g. **Energy\*\*:** 12 KWH
- h. **Maintenance Costs:** \$1,600/year
- i. **Availability of construction materials and process chemicals:**  
Package scrubbers are available through various manufacturers.
- j. **Applicability to manufacturing processes:** Compatible with process
- k. **Ability to construct with control device, install in available space, and operate within proposed levels:**  
Moderate space available

\*Explain method of determining efficiency. Manufacturer's design guarantee

\*\*Energy to be reported in units of electrical power - KWH design rate.

3.

- a. **Control Device:**
- b. **Operating Principles:**
- c. **Efficiency\*:**
- d. **Capital Cost:**
- e. **Life:**
- f. **Operating Cost:**
- g. **Energy:**
- h. **Maintenance Cost:**

\*Explain method of determining efficiency above.

- i. Availability of construction materials and process chemicals:
  - j. Applicability to manufacturing processes:
  - k. Ability to construct with control device, install in available space and operate within proposed levels:
- 4.
- a. Control Device
  - b. Operating Principles:
  - c. Efficiency\*:
  - d. Capital Cost:
  - e. Life:
  - f. Operating Cost:
  - g. Energy:
  - h. Maintenance Cost:
  - i. Availability of construction materials and process chemicals:
  - j. Applicability to manufacturing processes:
  - k. Ability to construct with control device, install in available space, and operate within proposed levels:

F. Describe the control technology selected:

- 1. Control Device: Spray Chamber (this scrubber is already owned)
- 2. Efficiency\*: 99+
- 3. Capital Cost: \$5,000 (to recoat inside)
- 4. Life: 20 Years
- 5. Operating Cost: \$8,186
- 6. Energy: 10 KWH
- 7. Maintenance Cost: \$1,000
- 8. Manufacturer: Rigidome
- 9. Other locations where employed on similar processes: None known

a.

- (1) Company:
- (2) Mailing Address:
- (3) City:
- (4) State:
- (5) Environmental Manager:
- (6) Telephone No.:

\*Explain method of determining efficiency above. Fluoride emissions calculated from test data

(7) Emissions\*:

| Contaminant | Rate or Concentration |
|-------------|-----------------------|
| Fluoride    | 0.86 Lbs./Hr.         |
| Particulate | 0.39 Lbs./Hr.         |

(8) Process Rate\*:

b.

- (1) Company:
- (2) Mailing Address:
- (3) City:
- (4) State:

\*Applicant must provide this information when available. Should this information not be available, applicant must state the reason(s) why.

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions\*:

Contaminant

Rate or Concentration

| Contaminant | Rate or Concentration |
|-------------|-----------------------|
|             |                       |
|             |                       |
|             |                       |

(8) Process Rate\*:

10. Reason for selection and description of systems:

\*Applicant must provide this information when available. Should this information not be available, applicant must state the reason(s) why.

STATE OF FLORIDA  
DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING  
2600 BLAIR STONE ROAD  
TALLAHASSEE, FLORIDA 32301-8241



BOB GRAHAM  
GOVERNOR  
VICTORIA J. TSCHINKEL  
SECRETARY

January 28, 1985

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. George Townsend  
Environmental Supervisor  
AMAX Chemical Corporation  
P. O. Box 790  
Plant City, Florida 34289

Dear Mr. Townsend:

Re: File No. AC 29-091316  
Phosphoric Acid Defluorination Plant

The Bureau has reviewed your reply to our request for additional information for the application for a permit to construct the above referenced plant. Several of the questions in our September 7, 1984, letter were not answered completely. Please provide the information requested below so that we can resume processing this application.

1. Please clarify drawing D-1 by providing a similar "plan" drawing showing the scrubber and all process vessels in the proposed defluorinating plant and note which vessels will be vented to the scrubber.
2. In the addendum, additional notes, there are two D.E. tanks listed but the letter to Mr. J. Floyd indicates in paragraph a) that there will be one slurry mixer. Please clarify how many slurry mixing tanks will be in the new plant.
3. Assuming a construction permit is issued in May, 1985, when will the construction of the proposed plant begin and when will it be completed?
4. Section II:A, indicates that maximum emissions occur during the slurring of the diatomaceous earth. What liquid is mixed with the D.E. in the slurry tank? Will the slurring take place in both 12,000 gallon acid tanks at the same time? How often will this occur?



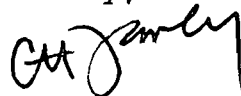
Mr. George Townsend  
Page Two  
January 28, 1985

5. Please clarify the operating sequence of the proposed facility-i.e., does the slurry tank discharge into one of the 12,000 gallon acid defluorination tanks and, while this defluorination tank is being sparged, the D.E. slurry tank refills and dumps into the other 12,000 gallon defluorination tank?
6. The Occidental Chemical Company BACT was for a different process than AMAX is proposing. Please complete Section VI of the application for AMAX's proposed process.
7. What are the chemical reactions between diatomaceous earth, caustic solution, phosphoric acid, and the fluoride contaminants? Are the fluoride emissions from the process in the form of HF or SiF<sub>6</sub>? Are Mr. Louis Lamb's calculations of emissions from the plant for total fluorides or HF only?
8. Are the feed prep acid storage, dikal acid storage, and dikal and sales acid storage tanks part of the proposed phosphoric acid defluorinating plant or existing tanks?
9. How are the precipitated fluoride compounds removed from the treated acid and what is done with them?
10. Does the scrubber recirculate the well water? If not, over 20,000 tons per year of water could enter the pond. Can the pond process this additional volume of water, especially during the rainy season?
11. Fluoride emissions are based on the heated acid producing 1.825 gr F/ft<sup>3</sup>. What is the basis for this emission factor?
12. The revised application listed a stack diameter of 1.33 feet and a flow of 35.81 FPS. Item 11 of your December 18 letter listed a different diameter (1.0') and flow (63.66 FPS). What is the correct diameter and flow?

Mr. George Townsend  
Page Three  
January 28, 1985

If you have any questions about the information being requested,  
please call Willard Hanks at (904)488-1344.

Sincerely,

A handwritten signature in black ink, appearing to read "C. H. Fancy". The signature is written in a cursive style with a large, looped initial "C".

C. H. Fancy, P.E.  
Deputy Chief  
Bureau of Air Quality  
Management

CHF/WH/s

cc: Bill Thomas, SW District  
Steve Gyrogog, HCEPC

No. 0155809

RECEIPT FOR CERTIFIED MAIL  
 NO INSURANCE COVERAGE PROVIDED—  
 NOT FOR INTERNATIONAL MAIL  
 (See Reverse)

|                             |   |  |   |
|-----------------------------|---|--|---|
| SENT TO                     |   | Mr. George Townsend                                      |   |
| STREET AND NO.              |   |  |   |
| P.O., STATE AND ZIP CODE    |   |  |   |
| POSTAGE                     |   | \$   |   |
| CONSULT POSTMASTER FOR FEES | CERTIFIED FEE   | ¢  |   |
|                             | SPECIAL DELIVERY  | ¢  |   |
|                             | RESTRICTED DELIVERY   | ¢  |   |
|                             | OPTIONAL SERVICES   | SHOW TO WHOM AND DATE DELIVERED                          | ¢ |
|                             |   | SHOW TO WHOM, DATE, AND ADDRESS OF DELIVERY              | ¢ |
|                             |   | SHOW TO WHOM AND DATE DELIVERED WITH RESTRICTED DELIVERY | ¢ |
| RETURN RECEIPT SERVICE      | SHOW TO WHOM, DATE AND ADDRESS OF DELIVERY WITH RESTRICTED DELIVERY | ¢  |   |
| TOTAL POSTAGE AND FEES      |   | \$   |   |
| POSTMARK OR DATE            |   | 1/29/85  |   |

PS Form 3800, Apr. 1976

PS Form 3811, Jan. 1979

1. SENDER: Complete items 1, 2, and 3. Add your address in the "RETURN TO" space on reverse.

1. The following service is requested (check one.)  
 Show to whom and date delivered. .... ¢  
 Show to whom, date and address of delivery. .... ¢  
 RESTRICTED DELIVERY  
 Show to whom and date delivered: ..... ¢  
 RESTRICTED DELIVERY.  
 Show to whom, date, and address of delivery. \$ \_\_\_\_  
 (CONSULT POSTMASTER FOR FEES)

2. ARTICLE ADDRESSED TO:  
 Mr. George Townsend  
 P. O. Box 790  
 Plant City, Florida 34289

3. ARTICLE DESCRIPTION:  

|                |               |             |
|----------------|---------------|-------------|
| REGISTERED NO. | CERTIFIED NO. | INSURED NO. |
|                | 0155809       |             |

 (Always obtain signature of addressee or agent)  
 I have received the article described above.  
 SIGNATURE  Addressee  Authorized agent

4. DATE OF DELIVERY: 2-1-85  
 POSTMARK: PLANT CITY, FLA. FEB 19 1985

5. ADDRESS (Complete only if requested)

6. UNABLE TO DELIVER BECAUSE:

CLERK'S INITIALS

STATE OF FLORIDA  
DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING  
2600 BLAIR STONE ROAD  
TALLAHASSEE, FLORIDA 32301-8241



BOB GRAHAM  
GOVERNOR

VICTORIA J. TSCHINKEL  
SECRETARY

September 7, 1984

Mr. George Townsend  
Environmental Supervisor  
AMAX Chemical Corporation  
Post Office Box 790  
Plant City, Florida 33566

Dear Mr. Townsend:

Hillsborough County Environmental Protection Commission (HCEPC) and the department have made an initial review of AMAX Chemical Corporation's applications for permits to construct a phosphoric acid defluorinating plant and install a dust collector on a conveyor belt transfer point. Before the applications can be considered complete, we will need the following information.

Phosphoric Acid Defluorination Plant (file No. AC 29-091316)

1. On the drawings D-1 and D-2 or a separate drawing, show the proposed process equipment and air pollution control equipment (ducts and scrubber) that this application is to cover. Also show the operating permit numbers of the adjacent processes.
2. Please provide a process description of the proposed project, with reference to the process flow sheet, and include the chemical reactions that occur in the process.
3. How are raw materials transported to the plant, unloaded, stored, conveyed to process, and air pollutant emissions controlled during each of these operations?
4. Please provide a Best Available Control Technology (BACT) determination for fluorides (Rule 17-2.630, FAC) as required by Rule 17-2.600(3)(a)9., FAC. Consider a spray-cross flow packed bed scrubber in the determination.
5. For the scrubber you recommend as BACT, what is the design scrubber water pressure (in. water), scrubber water flow (GPM), and gas pressure drop (in. water)?

Mr. Townsend  
September 7, 1984  
Page two

6. Please revise Section III: A and B to include other materials (water?) to account for the product weight of 51,872 lb/hr which is greater than the 51,649 lb/hr of raw material. What is the P<sub>2</sub>O<sub>5</sub> content of the phosphoric acid used in the process?
7. In Section III: C, what is the basis of the allowable fluoride emissions of 0.18 lb/hr?
8. What is the estimated increase in fluoride emissions from the process water pond as a result of this project?
9. What is the basis of the 25 lb particulate matter/hr and 49.23 lb fluorides/hr inlet loading to the scrubber? What is the basis for the 0.85 percent fluoride content of the phosphoric acid into the plant?
10. Please provide a copy of the calculations that concluded the proposed scrubber will be 98 percent efficient on particulate matter and fluoride emissions. Include the particulate matter particle size distribution of the inlet loading to the scrubber.
11. How will the stack velocity (10 FPS) be measured during the compliance test? Is the correct stack diameter 25 inches?

Conveyor Belt Transfer Point Dust Collector  
(file No. AC 29-091317)

1. On the drawings D-1 and D-2 or a separate drawing, show what conveyor belt the proposed dust collector will control and the operation permit numbers for it (if any) and adjacent process and material handling equipment.
2. Please provide a description of the conveyor belt to be controlled, stating what process equipment discharges on to it and where it discharges to.
3. How will fugitive emissions from the belt and its discharge point be controlled?
4. Are there any other uncontrolled emission points in the CDP material handling system? If so, what plans does the company have to control them?

Mr. Townsend  
September 7, 1984  
Page three

5. Did HCEPC agree in writing to accept 0.02 grains/DSCF as the emission standard?
6. What guarantee or specifications did the dust collector manufacturer provide for the emission from his equipment? What is the particle size distribution of the particulate matter to the dust collector?
7. What is the percent moisture in the gas handled by the proposed dust collector?

Sincerely,



C. H. Fancy, P.E.  
Deputy Chief  
Bureau of Air Quality  
Management

CHF/WH/agh

cc: Bill Thomas  
Steve Gyorog

No. 0156561

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED—  
NOT FOR INTERNATIONAL MAIL  
(See Reverse)

|   |                     |   |    |
|---|---------------------|---|----|
| SENT TO   |                     |   |    |
| Mr. George Townsend   |                     |   |    |
| STREET AND NO.  |                     |   |    |
| P.O., STATE AND ZIP CODE  |                     |   |    |
| POSTAGE \$  |                     |   |    |
| CONSULT POSTMASTER FOR FEES   | CERTIFIED FEE       | \$  |    |
|   | SPECIAL DELIVERY    | \$  |    |
|   | RESTRICTED DELIVERY | \$  |    |
|   | OPTIONAL SERVICES   | RETURN RECEIPT SERVICE                      | \$ |
|   |                     | SHOW TO WHOM AND DATE DELIVERED             | \$ |
|   |                     | SHOW TO WHOM, DATE, AND ADDRESS OF DELIVERY | \$ |
| SHOW TO WHOM AND DATE DELIVERED WITH RESTRICTED DELIVERY            |                     | \$  |    |
| SHOW TO WHOM, DATE AND ADDRESS OF DELIVERY WITH RESTRICTED DELIVERY | \$                  |   |    |
| TOTAL POSTAGE AND FEES \$   |                     |   |    |
| POSTMARK OR DATE  |                     |   |    |
| 9/7/84  |                     |   |    |

PS Form 3800, Apr. 1976

PS Form 3811, Jan. 1978

RETURN RECEIPT, REGISTERED, INSURED AND CERTIFIED MAIL

SENDER: Complete Items 1, 2, and 3. Add your address in the "RETURN TO" space on reverse.

1. The following service is requested (check one.)

Show to whom and date delivered. . . . . \$

Show to whom, date and address of delivery. . . . . \$

RESTRICTED DELIVERY

Show to whom and date delivered. . . . . \$

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Show to whom, date, and address of delivery \$

(CONSULT POSTMASTER FOR FEES)

2. ARTICLE ADDRESSED TO:

Mr. George Townsend  
P. O. Box 790  
Plant City, FL 33566

3. ARTICLE DESCRIPTION:

|                |               |             |
|----------------|---------------|-------------|
| REGISTERED NO. | CERTIFIED NO. | INSURED NO. |
|                | 0156561       |             |

(Always obtain signature of addressee or agent)

I have received the article described above.

SIGNATURE  Addressee  Authorized agent

*Thomas P. Johnson*

4. DATE OF DELIVERY 9/10/84

5. ADDRESS (Complete only if requested)

6. UNABLE TO DELIVER BECAUSE:

POSTMARK: SEP 10 1984 PLANT CITY FL

CLERK'S INITIALS: *[Signature]*

# AMAX Chemical Corporation

A SUBSIDIARY OF AMAX INC.

P. O. BOX 790 ♦ PLANT CITY, FLORIDA 34289 ♦ (813) 752-1161

December 18, 1984

DER

JAN 11 1985

BAQM

Mr. C. H. Fancy, P.E.  
Bureau of Air Quality Management  
Florida Department of  
Environmental Regulation  
Twin Towers Office Building  
2600 Blair Stone Road  
Tallahassee, FL 32301-8241

Dear Mr. Fancy:

In response to a letter of incompleteness concerning File No. AC29-091316, the Phosphoric Acid Defluorination Facility Scrubber, and File No. AC29-091317, the Conveyor Belt Transfer Point Dust Collector, we are submitting a revised permit application for the phosphoric acid defluorination facility modification and the following responses as the questions were presented.

RE: File No. AC29-091316

1. An addition has been made to drawing D-1 to indicate the proposed air pollution control equipment as it relates to the process, and a new drawing (D-2) has been added (see the revised permit application).
2. See Section II: A of the revised permit application.
3. All raw material for the phosphoric acid defluorination facility are manufactured off-site. The phosphoric acid is received in railcars and is pumped, closed pipe, to storage or defluorinating tanks as needed. Caustic solution used in the process is brought in by tank truck and pump, closed pipe, to the storage tank. Diatomaceous earth (D.E.) is received in 50 pound bags and is initially put into the process by hand. The D.E. is then pumped as a slurry to the acid defluorinating tank as needed.
4. See the BACT determination attached to the revised permit for a similar process at the Occidental Chemical Company. However, the Occidental process is designed to strip the fluoride from the acid in the form of  $\text{SiF}_6$ ; whereas the AMAX process is designed to precipitate the majority of the fluoride in the form of  $\text{Na}_2\text{SiF}_6$ .



5. The operating conditions for the proposed scrubber are as follows:  

|                          |                           |
|--------------------------|---------------------------|
| Scrubber Water Pressure, | 45-75 psig                |
| Scrubber Water Flow,     | 30-40 gpm                 |
| Gas Pressure Drop,       | 5.0-6.0" H <sub>2</sub> O |
6. Please see Section III: A and B of the revised permit application. Typical laboratory analyses of the phosphoric acid used in the process is 50-54% with an overall average of 52%.
7. In the revised permit application the allowable fluoride emission is shown as 0.86 lbs/hr. This figure was calculated using the 0.04 lbs/ton of P<sub>2</sub>O<sub>5</sub> input reflected in the attached BACT determination for a like process.
8. There should be no significant increase in fluoride emission from the process water ponds. The process water from the proposed scrubber, as with all process water, will be treated to precipitate fluorides from the process water. Furthermore, the approximately 32 tons maximum per year pond input from this scrubber would have a minor impact on the total pond volumes.
9. The inlet loadings shown in the revised permit application are 3.6 lbs/hr for particulate matter and 31.28 lbs/hr for fluorides. These were determined from test data collected at the process. When the phosphoric acid is purchased laboratory analysis is routinely performed. The fluoride content for acid used in the process is typically 0.60-1.1% with an overall average of 0.85%.
10. Please see Attachment A for the calculations used to determine the fluoride removal efficiency of 99+% for the proposed scrubber. At this time there is no actual data available to establish a particulate removal efficiency for the proposed scrubber. However, AMAX is reasonably assured the proposed scrubber will be more than adequate for this application. Furthermore, AMAX will guarantee the scrubber will meet the 0.015 grain/ACF established as BACT for a similar process (see Attachment G of the revised permit application). The particle size distribution and the mean diameter of the diatomaceous earth are shown in Attachment A of this letter.
11. In the revised permit application the linear velocity of the stack is approximately 63.66 FPS and the stack diameter is 1.0 feet.

The revised permit application for the phosphoric acid defluorination facility is to replace, in its entirety, the previous application--File No. AC29-091316. This is necessary due to the changes in and correction to the previous application.

Mr. C. H. Fancy  
December 18, 1984  
Page Three

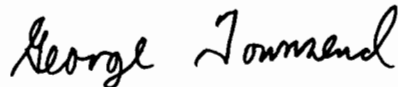
RE: File No. AC29-091317

1. See Attachment B.
2. The conveyor belt begins at the CDP product storage bins. As product is removed from the bins it enters an enclosed screw conveyor where a dedusting agent is added. The product exits the screw conveyor via a chute and onto a covered belt conveyor. This belt, after a 90° transfer point, continues on to the bulk storage bins to be loaded onto railcar as customer requirements dictate.
3. The belt discharges into an enclosure/chute. At this point, with possible exception of some belt carry-over, the dedusting agent has agglomerated the fine particles to virtually eliminate any further dusting at the discharge point.
4. See 1, 2, and 3.
5. HCEPC did not agree in writing to accept 0.02 grains/DSCF as the emission standard.
6. See Attachment C.
7. Moisture content of the gas is approximately 3-4 percent.

We are also requesting the start of construction and the completion of construction dates of the transfer point dust collector project be changed. The start of construction should be changed from September 1, 1984 to March 1, 1984; and the construction completion date should be changed from December 1, 1984 to August 1, 1984.

Should additional information be required, please let me know.

Sincerely,



George Townsend  
Environmental Supervisor

GT/cw

attachments

cc: Bill Thomas (DER)  
Steve Gerrog (HCEPC)  
J. J. Lewis  
F. G. Mullins

November 7, 1984

Mr. J. Floyd  
 Plant Engineer  
 Amax Chemical  
 P.O. Box 790  
 Plant City, Florida 33566

Subject: A scrubber for a point source

Amax plans to use one of four Rigidome 4837 scrubbers, used originally for the C-78 project in 1973. The scrubber is 16' high by 4' in diameter. A 1½" thick Beco pad demister is located at the 14' level. A domed 2' high cover serves to remove the demisted gas for transport to the blower. (See Plan: East & south elevation.) Eight spray headers are mounted in pairs at right angle to each other. Each pair is separated vertically by a distance of 2'. Each pair is offset a few inches horizontally to assure full spray coverage. The sprays produce a 90° cone with 50 psig water delivering 1.1 gpm. The headers are sealed by means of rubber stoppers to fill the entrance hole. The far side of the header rests on a 2" saddle mounted on the inside wall. A Hartzell fan operating at 3000 scfm will be used for scrubber air transport.

The following phases will be discussed for fluoride and dust removal:  
 a) Pollution collection from the source. b) Scrubber action. c) Air pollution impact.

a) Pollution collection: There will be three sources; Two 12' diameter acid reaction tanks and one Kennite slurry mixer. They will be connected to the scrubber sump by means of 8" ducts tied to a single inlet duct at the scrubber. Consequently each source will be swept by approximately 1000 scfm air.

Fluoride: Calculations are based on the worst conditions, viz: Heated acid producing 1.825 gr/ft<sup>3</sup> of tank acid surface for approximately 2 hours. Under these conditions as air sweeps the surface, 1.825 gr/ft<sup>3</sup> of fluorine will emerge from the surface as vapor. The covered tanks will have an open space of about 1' above the acid. Then F produced each minute is:

$$1) F \text{ gr/ft}^3 \text{ two tanks} = 1.825 \times 2 = 3.650$$

Kennite dust: The dust loading found at the slurry tank:

$$2) \text{ gr/ft}^3 = 0.42$$

Then with an air sweep of 1000 scfm, the grains per minute is:

$$3) \text{ gr/min} = 0.42 \times 1000 = 420$$

$$4) \text{ lbs/min} = \frac{420}{7000} = 0.060*$$

\* An isokinetic deviation occurs, that is, gas or dust entering a duct from a large open area at 1000 scfm, acts like a funnel drawing in more pollutant than found in the air above the slurry or acid. Consequently the loading the scrubber receives may be a little higher.

b) Scrubber action:

Gas absorption in water is dependent upon the effective surface area covered by spray action in a given time and then equating that to the scrubber cross sectional area that the air must traverse. Plant City pond water is maintained at a pH of about 3.0. At this pH there are many ions which will combine with fluoride, both positive and negative, which will aid in the reduction of volatile escape. However, it is understood that Amax plans to use well water.

Scrubber dimensions: The inside dimensions are 4' diameter by 14' to the demister. A sump overflow at 2' leaves an active height of 12'.  
Sprays: The scrubber manifolds are fitted with Spraying Systems hollow cone sprays with an orifice of 0.140" and operating at 50 psig, a cone of 90° is produced at a usable vertical coverage of 2'. See page 1 for other dimensions.) Average spray drop size is 100  $\mu$  in diameter using 1.1 gpm water.

$$5) \text{ Drop volume: cc} = \frac{4}{3}\pi r^3. \text{ Drop radius: cm} = \frac{100}{2} \times 10^{-4} = 5.0 \times 10^{-3}$$

$$6) \text{ Vol. cc/drop} = \frac{4}{3}\pi(5.0 \times 10^{-3})^3 = 5.24 \times 10^{-7}$$

Gas velocity: (counter flow.)  $r=2'$

$$7) \text{ ft/sec} = \frac{3000}{\pi r^2 \times 60} = 4.0 \text{ ft/sec}$$

$$8) \text{ Drops/spray sec} = \frac{1.1 \times 3785.4^{**}}{60 \times 5.24 \times 10^{-7}} = 13.244 \times 10^7$$

Area drops/sec:

Since the area of a sphere is  $4\pi r^2$ , only one half of the area is contacted by the rising gas. Neglecting the other half, which is also contacted, (but to a lesser degree) because of the random action of a gas, the area calculated will be  $2\pi r^2$ .

$$9) \text{ Area ft}^2/\text{ spray sec} = \frac{13.244 \times 10^7 \times 2\pi(5.0 \times 10^{-3})^2}{929.03^{***}} = 22.4 \text{ ft}^2/\text{spray sec}$$

Each manifold spray pair has 8 sprays and each pair is separated vertically by a distance of 2', then the area covered by each pair becomes: Area ft<sup>2</sup>/sec = 8 x 22.4 = 179.2.

The gas rises at a rate of 4'/sec, therefore it traverses two manifold pairs each second. The area of the rising gas is  $\pi r^2$ , and  $r=2$ , then the area becomes  $A = \pi 4 = 12.6 \text{ ft}^2$ . Since it moves vertically 2' each second, then the number of gas areas contacting the water spray curtain becomes:

$$10) \text{ No} = \frac{2 \times 179.2}{12.6} = 28.4 \text{ and since it takes 2 seconds for the gas to traverse the entire scrubber the number becomes: No} = 2 \times 28.4 = 56.8$$

\* is  $10^{-6}$  meters

\*\* cc/gal

\*\*\*  $\frac{2}{r+2}$

Dust removal:

## Screen sizes:

| <u>M</u> | <u>%</u> |
|----------|----------|
| -20      | 98.0     |
| -10      | 94.5     |
| -6       | 73.0     |
| -2       | 27.0     |
| -1       | 17.0     |
| -0.5     | 10.0     |
| -0.25    | 5.0      |

$$\text{Average particle size} = \frac{\sum d_i \times (100 - \%)}{n}^{1,+2,+}$$

$$= 0.74 \mu$$

The dust size is still many times larger than fluoride vapor, however the large area covered by the spray film may assure adequate dust removal. Tests should be conducted to confirm this statement.

c) Air pollution impact:

It is understood that fresh water will be used.

Fluoride: Entering the scrubber:

$$11) \text{ lbs F/hr} = \frac{3.650 \times 60 \times 1000}{7000} = 31.284$$

$$12) \text{ Water lbs/hr} = 32 \times 8.345 \times 60 \times 1.1 = 17,625$$

$$13) \%HF = \frac{31.284 \times 20/19 \times 100}{17,625} = 0.1868$$

Using the table from patent No 39,423 -- 1947\* and assume a straight line function, and extrapolating to %HF= 0.1868 at 80° F then:

$$\%HF/\text{lbs dry air} = 6.576 \times 10^{-6}$$

$$14) \text{ Lbs dry air/hr} = \frac{3000 \times 60 \times \left[ \frac{29.92 - 1.032^{**}}{29.92} \right] \times 29.00 \times 528}{359 \times 540} = 13,727$$

$$15) \text{ lbs HF/hr} = \frac{13,727 \times 6.576 \times 10^{-6}}{10^2} = 9.027 \times 10^{-4}$$

Dust:

Amax now employs a small water scrubber to remove Kennite dust which is doing a satisfactory job. It is anticipated that the C-78 scrubber should perform satisfactorially, however tests should be conducted.

Comments:

Based on the above analysis, the Rigidome scrubber used in the 1973 C-78 tests, should remove fluoride vapors adequately.

*Louis John Lamb*  
Louis John Lamb  
Consultant

\* See attached patent computer printout.

\*\* Water vapor pressure, "Hg at 80° F.

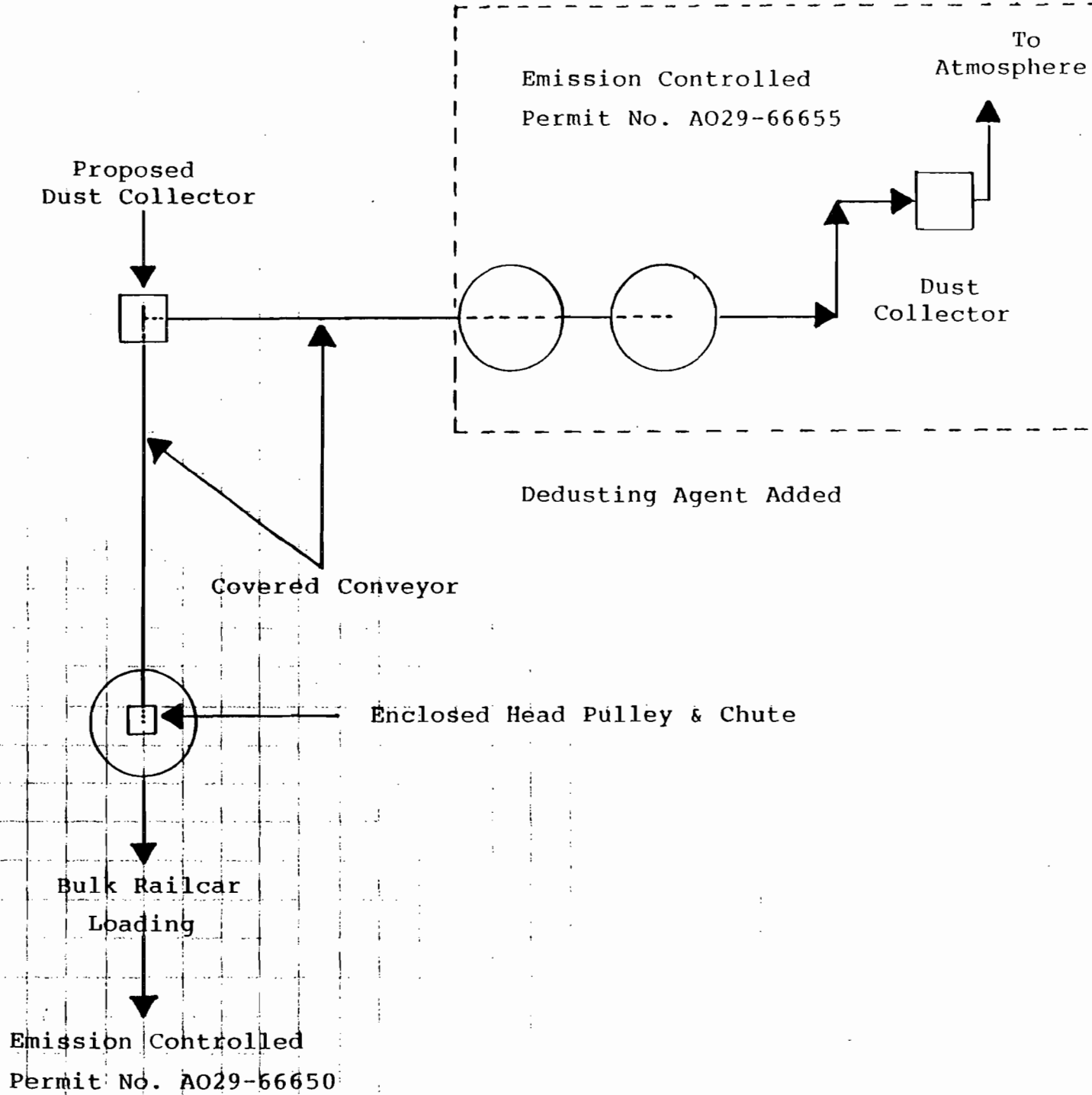
TABLE OF HF VAPOR COMPOSITION  
 DERIVED FROM TVA DATA  
 BROSHEER ET AL, I&EC 39, 423, 1947

ZHF  
 IN LIQUOR

LBS HF  
PER LB DRY AIR

|      | 80 DEG F   | 100 DEG F  | 120 DEG F  | 140 DEG F  |
|------|------------|------------|------------|------------|
| .1   | 3.92672E-6 | 7.86430E-6 | 1.54041E-5 | 3.01668E-5 |
| .2   | 6.97836E-6 | 1.39763E-5 | 2.73761E-5 | 5.36096E-5 |
| .3   | 9.75996E-6 | 1.95463E-5 | 3.82839E-5 | 7.49660E-5 |
| .4   | 1.23345E-5 | 2.48021E-5 | 4.85766E-5 | 9.51156E-5 |
| .5   | 1.49040E-5 | 2.98474E-5 | 5.84564E-5 | 1.14454E-4 |
| .6   | 1.73473E-5 | 3.47407E-5 | 6.80379E-5 | 1.33207E-4 |
| .7   | 1.97343E-5 | 3.95193E-5 | 7.73942E-5 | 1.51516E-4 |
| .8   | 2.20766E-5 | 4.42091E-5 | 8.65759E-5 | 1.69481E-4 |
| .9   | 2.43840E-5 | 4.88239E-5 | 9.56199E-5 | 1.87174E-4 |
| 1.   | 2.66637E-5 | 5.33930E-5 | 1.04554E-4 | 2.04650E-4 |
| 1    | 2.66637E-5 | 5.33930E-5 | 1.04554E-4 | 2.04650E-4 |
| 1.5  | 3.78097E-5 | 7.57053E-5 | 1.48220E-4 | 2.90027E-4 |
| 2    | 4.87914E-5 | 9.76839E-5 | 1.91216E-4 | 3.74028E-4 |
| 2.5  | 5.98116E-5 | 1.19734E-4 | 2.34334E-4 | 4.58200E-4 |
| 3    | 7.09882E-5 | 1.42092E-4 | 2.78033E-4 | 5.43435E-4 |
| 3.5  | 8.24012E-5 | 1.64917E-4 | 3.22625E-4 | 6.30336E-4 |
| 4    | 9.41100E-5 | 1.88328E-4 | 3.68338E-4 | 7.19343E-4 |
| 4.5  | 1.06163E-4 | 2.12419E-4 | 4.15359E-4 | 8.10310E-4 |
| 5    | 1.18600E-4 | 2.37272E-4 | 4.63842E-4 | 9.05033E-4 |
| 5.5  | 1.31458E-4 | 2.62959E-4 | 5.13925E-4 | 1.00227E-3 |
| 6    | 1.44770E-4 | 2.89546E-4 | 5.65735E-4 | 1.10277E-3 |
| 6.5  | 1.58568E-4 | 3.17094E-4 | 6.19390E-4 | 1.20674E-3 |
| 7    | 1.72880E-4 | 3.45662E-4 | 6.75003E-4 | 1.31439E-3 |
| 7.5  | 1.87738E-4 | 3.75309E-4 | 7.32685E-4 | 1.42594E-3 |
| 8    | 2.03170E-4 | 4.06093E-4 | 7.92543E-4 | 1.54158E-3 |
| 8.5  | 2.19205E-4 | 4.38069E-4 | 8.54688E-4 | 1.66151E-3 |
| 9    | 2.35872E-4 | 4.71296E-4 | 9.19227E-4 | 1.78593E-3 |
| 9.5  | 2.53200E-4 | 5.05831E-4 | 9.86269E-4 | 1.91505E-3 |
| 10   | 2.71220E-4 | 5.41733E-4 | 1.05593E-3 | 2.04906E-3 |
| 10.5 | 2.89963E-4 | 5.79062E-4 | 1.12831E-3 | 2.18817E-3 |
| 11   | 3.09458E-4 | 6.17880E-4 | 1.20354E-3 | 2.33260E-3 |
| 11.5 | 3.29739E-4 | 6.58248E-4 | 1.28173E-3 | 2.48256E-3 |
| 12   | 3.50837E-4 | 7.00232E-4 | .001363    | 2.63828E-3 |
| 12.5 | 3.72787E-4 | 7.43896E-4 | 1.44748E-3 | 2.79997E-3 |
| 13   | 3.95624E-4 | 7.89310E-4 | 1.53530E-3 | 2.96788E-3 |
| 13.5 | 4.19383E-4 | 8.36543E-4 | 1.62658E-3 | 3.14224E-3 |
| 14   | 4.44101E-4 | 8.85668E-4 | 1.72147E-3 | 3.32330E-3 |
| 14.5 | 4.69815E-4 | 9.36759E-4 | 1.82010E-3 | 3.51132E-3 |
| 15   | 4.96566E-4 | 9.89903E-4 | 1.92262E-3 | 3.70656E-3 |
| 15.5 | 5.24394E-4 | 1.04515E-3 | 2.02913E-3 | 3.90930E-3 |
| 16   | 5.53341E-4 | 1.10261E-3 | 2.13993E-3 | 4.11932E-3 |
| 16.5 | 5.83450E-4 | 1.16236E-3 | 2.25504E-3 | 4.33841E-3 |
| 17   | 6.14766E-4 | 1.22449E-3 | 2.37407E-3 | 4.56538E-3 |
| 17.5 | 6.47338E-4 | 1.28900E-3 | 2.49898E-3 | 4.80103E-3 |
| 18   | 6.81180E-4 | 1.35604E-3 | 2.62917E-3 | 5.04570E-3 |
| 18.5 | 7.16438E-4 | 1.42566E-3 | 2.76240E-3 | 5.29971E-3 |
| 19   | 7.53082E-4 | 1.49804E-3 | 2.90138E-3 | 5.56343E-3 |
| 19.5 | 7.91101E-4 | 1.57409E-3 | 3.04600E-3 | 5.83721E-3 |
| 20   | 8.30701E-4 | 1.65295E-3 | 3.19736E-3 | 6.12142E-3 |

BY



# THE DALAMATIC

DALAMATIC reverse jet fabric filters are designed for continuous operation on applications where product or nuisance dusts are involved and where high collection efficiencies are required. The Dalamatic is capable of filtering heavy dust burdens at a high filtration velocity and a constant level of resistance. Collection efficiency often exceeds 99.99%.

The Dalamatics have proven themselves through years of successful performance and have gained wide acceptance in the world's most demanding markets. The improvements in the current design have resulted from the experience gained through thousands of installations cleaning millions of CFM. These modifications have improved filter performance, capacity, and convenience of maintenance, without increasing costs. Today's Dalamatics meet today's rigid requirements.

## **Some Dalamatic advantages:**

### ● **Downward Flow**

The top inlet of this filter insures a downward flow and more effective operation. Other types with bottom inlet and upward air flow have a higher pressure loss for a given filtration velocity.

### ● **Cleanside Access**

Full width access from the clean air side makes inspections and changing of filter envelopes easier and safer. Access from the dust side — as on some competitive models — is always unpleasant and may even be dangerous when toxic contaminants are involved.

### ● **Convenient Envelope Size**

Filter elements are designed so that one man can change a filter envelope without help. In some designs this is impossible.

### ● **No Moving Parts**

Filter envelopes are cleaned in turn by a brief burst of compressed air in the reverse direction of the main air flow. This is electronically controlled, automatic and continuous. With no moving parts, filter reliability is greater than with mechanical cleaning systems.

### ● **Advanced Production Methods**

Our designs utilize sophisticated manufacturing techniques which produce a sturdy filter casing at a relatively low cost.

### ● **Tight Envelope Seals**

The Dalamatic method of sealing each filter envelope by compressing an integral sealing ring between the insert header and the seal frame insures a tight seal — without screws and toggle bolts.

### ● **Easy Access to Controls**

The controller and filter cleaning assembly are located below the clean air chamber for easy access and adjustment. Top-mounted equipment can be difficult to reach.

### ● **Very Compact**

The flat envelope configuration of filter elements makes the Dalamatic extremely compact and insures maximum filtration area in a given space.

### ● **Double Banking**

To save additional space two multi-bank assemblies can be jointed on either the dirty or the clean air sides. This means a considerable saving in the need for access platforms and inspection doors while keeping the advantage of easy access for envelope changing.





**STATE OF FLORIDA  
DEPARTMENT OF ENVIRONMENTAL REGULATION  
APPLICATION TO OPERATE/CONSTRUCT  
AIR POLLUTION SOURCES**

SOURCE TYPE: Point Source Air Pollution [ ] New<sup>1</sup> [X] Existing<sup>1</sup>  
 APPLICATION TYPE: [X] Construction [ ] Operation [X] Modification  
 COMPANY NAME: AMAX Chemical Corporation COUNTY: Hillsborough  
 Identify the specific emission point source(s) addressed in this application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peeking Unit No. 2, Gas Fired) Phosphoric Acid Defluorinating Plant w/ Upflow Counter Current Scrubber  
 SOURCE LOCATION: Street Coronet Road City Plant City  
 UTM: East 17-393.8 North 3096.3  
 Latitude \_\_\_\_\_ ° \_\_\_\_\_ ' \_\_\_\_\_ "N Longitude \_\_\_\_\_ ° \_\_\_\_\_ ' \_\_\_\_\_ "W  
 APPLICANT NAME AND TITLE: J. J. Lewis, Plant Manager  
 APPLICANT ADDRESS: P. O. Box 790, Plant City, FL 33566

**SECTION I: STATEMENTS BY APPLICANT AND ENGINEER**

**A. APPLICANT**

I am the undersigned owner or authorized representative\* of AMAX Chemical Corporation  
 I certify that the statements made in this application for a Construction Modification permit are true, correct and complete to the best of my knowledge and belief. Further, I agree to maintain and operate the pollution control source and pollution control facilities in such a manner as to comply with the provision of Chapter 403, Florida Statutes, and all the rules and regulations of the department and revisions thereof. I also understand that a permit, if granted by the department, will be non-transferable and I will promptly notify the department upon sale or legal transfer of the permitted establishment.

\*Attach letter of authorization

Signed: J. J. Lewis  
J. J. Lewis, Plant Manager  
 Name and Title (Please Type)  
 Date: 12/27/84 Telephone No. (813) 752-1161

**B. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA (where required by Chapter 471, F.S.)**

This is to certify that the engineering features of this pollution control project have been designed/examined by me and found to be in conformity with modern engineering principles applicable to the treatment and disposal of pollutants characterized in the permit application. There is reasonable assurance, in my professional judgment, that the pollution control facilities, when properly maintained and operated, will discharge an effluent that complies with all applicable statutes of the State of Florida and the rules and regulations of the department. It is also agreed that the undersigned will furnish, if authorized by the owner, the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.

(Affix Seal)



Signed: Anthony R. Lenkei  
Anthony R. Lenkei  
 Name (Please Type)  
AMAX Chemical Corporation  
 Company Name (Please Type)  
P. O. Box 790, Plant City, FL 33566  
 Mailing Address (Please Type)  
 Date: 1, 4, 85 Telephone No. (813) 752-1161

Florida Registration No. 8716

<sup>1</sup>See Section 17-2.02(15) and (22), Florida Administrative Code, (F.A.C.)

**SECTION II: GENERAL PROJECT INFORMATION**

A. Describe the nature and extent of the project. Refer to pollution control equipment, and expected improvements in source performance as a result of installation. State whether the project will result in full compliance. Attach additional sheet if necessary.  
See attached Section II: A

B. Schedule of project covered in this application (Construction Permit Application Only)  
 Start of Construction February 1, 1981 Completion of Construction August 1, 1984

C. Costs of pollution control system(s): (Note: Show breakdown of estimated costs only for individual components/units of the project serving pollution control purposes. Information on actual costs shall be furnished with the application for operation permit.)  
\$22,000 - Equipment and material (capital for scrubber already expended)  
\$ 8,000 - Labor

D. Indicate any previous DER permits, orders and notices associated with the emission point, including permit issuance and expiration dates.  
Not applicable

E. Is this application associated with or part of a Development of Regional Impact (DRI) pursuant to Chapter 380, Florida Statutes, and Chapter 22F-2, Florida Administrative Code? Yes  No

F. Normal equipment operating time: hrs/day 8; days/wk 5; wks/yr 52; if power plant, hrs/yr N/A;  
 if seasonal, describe: This is a batch process which defluorinates acid as the production and sale of defluorinated acid demands.

G. If this is a new source or major modification, answer the following questions. (Yes or No)

|   |            |
|---|------------|
| 1. Is this source in a non-attainment area for a particular pollutant?  | <u>Yes</u> |
| a. If yes, has "offset" been applied?   | <u>N/A</u> |
| b. If yes, has "Lowest Achievable Emission Rate" been applied?  | <u>N/A</u> |
| c. If yes, list non-attainment pollutants.<br><u>Ozone and VOC</u>  |            |
| 2. Does best available control technology (BACT) apply to this source? If yes, see Section VI.  | <u>Yes</u> |
| 3. Does the State "Prevention of Significant Deterioration" (PSD) requirements apply to this source? If yes, see Sections VI and VII. | <u>No</u>  |
| 4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source?  | <u>No</u>  |
| 5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source?                                       | <u>No</u>  |

Attach all supportive information related to any answer of "Yes". Attach any justification for any answer of "No" that might be considered questionable.

**SECTION III: AIR POLLUTION SOURCES & CONTROL DEVICES (Other than Incinerators)**

**A. Raw Materials and Chemicals Used in your Process, if applicable:**

| Description        | Contaminants |      | Utilization Rate - lbs/hr | Relate to Flow Diagram     |
|--------------------|--------------|------|---------------------------|----------------------------|
|                    | Type         | % Wt |                           |                            |
| Phosphoric Acid    | Fluoride     | 0.85 | 82,536*                   | See Attachment D-1 and D-2 |
| Diatomaceous Earth | Particulate  | 100  | 375*                      | See Attachment D-1 and D-2 |
| Caustic            | N/A          | N/A  | 1,017*                    | See Attachment D-1 and D-2 |
| Water              | N/A          | N/A  | 373*                      | See Attachment D-1 and D-2 |
|                    |              |      |                           |                            |

\*Utilization rate based on a four hour per batch time factor.

**B. Process Rate, if applicable: (See Section V, Item 1)**

1. Total Process Input Rate (lbs/hr): 84,301 (see \* above)
2. Product Weight (lbs/hr): 84,301 (see \* above)

**C. Airborne Contaminants Emitted:**

| Name of Contaminant | Emission <sup>1</sup> |             | Allowed Emission <sup>2</sup><br>Rate per<br>Ch. 17-2, F.A.C. | Allowable <sup>3</sup><br>Emission<br>lbs/hr | Potential Emission <sup>4</sup> |       | Relate to Flow Diagram |
|---------------------|-----------------------|-------------|---|--|---------------------------------|-------|------------------------|
|                     | Maximum lbs/hr        | Actual T/yr |   |  | lbs/hr                          | T/yr  |                        |
| Fluoride            | 0.86                  | ≥0.3253     | See Attachment G  | 0.86**                                       | 31.28                           | 32.53 | See Att. B-1           |
| Particulate         | 0.39                  | ≥0.406      | See Attachment G  | 0.39**                                       | 3.60                            | 3.744 | See Att. B-2           |
|                     |                       |             |   |  |                                 |       |                        |
|                     |                       |             |   |  |                                 |       |                        |

**D. Control Devices: (See Section V, Item 4)**

| Name and Type (Model & Serial No.) | Contaminant | Efficiency    | Range of Particles <sup>5</sup><br>Size Collected<br>(in microns) | Basis for Efficiency (Sec. V, It <sup>5</sup> ) |
|------------------------------------|-------------|---------------|---|---|
| Rigidome, Model 4837               | Fluoride    | 99+%          | N/A   | See Att. F                                      |
|                                    | Particulate | Not Available | 0.25 to 20.0  | See Att. F                                      |
|                                    |             |               |   |   |
|                                    |             |               |   |   |

<sup>1</sup>See Section V, Item 2.

<sup>2</sup>Reference applicable emission standards and units (e.g., Section 17-2.05(6) Table II, E. (1), F.A.C. - 0.1 pounds per million BTU heat input)

<sup>3</sup>Calculated from operating rate and applicable standard

\*\*Calculated from the allowables in the attached BACT determination for like process.

<sup>4</sup>Emission, if source operated without control (See Section V, Item 3)

<sup>5</sup>If Applicable

E. Fuels

| Type (Be Specific) | Consumption * |         | Maximum Heat Input (MMBTU/hr) |
|--------------------|---------------|---------|-------------------------------|
|                    | avg/hr        | max./hr |                               |
| Not applicable     |               |         |                               |
|                    |               |         |                               |
|                    |               |         |                               |
|                    |               |         |                               |

\*Units Natural Gas, MMCF/hr; Fuel Oils, barrels/hr; Coal, lbs/hr

Fuel Analysis:

Percent Sulfur: \_\_\_\_\_ Percent Ash: \_\_\_\_\_

Density: \_\_\_\_\_ lbs/gal Typical Percent Nitrogen: \_\_\_\_\_

Heat Capacity: \_\_\_\_\_ BTU/lb \_\_\_\_\_ BTU/gal

Other Fuel Contaminants (which may cause air pollution): \_\_\_\_\_

F. If applicable, indicate the percent of fuel used for space heating. Annual Average \_\_\_\_\_ Maximum \_\_\_\_\_

G. Indicate liquid or solid wastes generated and method of disposal.

Scrubber water from this unit will be piped to the recycle holding ponds. The solids will be used in another process or piped to the recycle holding ponds.

H. Emission Stack Geometry and Flow Characteristics (Provide data for each stack):

Stack Height: 28 ft Stack Diameter: 1.33 ft  
 Gas Flow Rate: 3,000 ACFM Gas-Exit-Temperature: 80 °F  
 Water Vapor Content: 3.0 % Velocity: 35.81 FPS

SECTION IV: INCINERATOR INFORMATION

| Type of Waste      | Type O (Plastics) | Type I (Rubbish) | Type II (Refuse) | Type III (Garbage) | Type IV (Pathological) | Type V (Liq & Gas By-prod.) | Type VI (Solid By-prod.) |
|--------------------|-------------------|------------------|------------------|--------------------|------------------------|-----------------------------|--------------------------|
| Lbs/hr Incinerated |                   |                  |                  |                    |                        |                             |                          |

Description of Waste \_\_\_\_\_

Total Weight Incinerated (lbs/hr) \_\_\_\_\_ Design Capacity (lbs/hr) \_\_\_\_\_

Approximate Number of Hours of Operation per day \_\_\_\_\_ days/week \_\_\_\_\_

Manufacturer \_\_\_\_\_

Date Constructed \_\_\_\_\_ Model No. \_\_\_\_\_

|                   | Volume<br>(ft) <sup>3</sup> | Heat Release<br>(BTU/hr) | Fuel |        | Temperature<br>(°F) |
|-------------------|-----------------------------|--------------------------|------|--------|---------------------|
|                   |                             |                          | Type | BTU/hr |                     |
| Primary Chamber   |                             |                          |      |        |                     |
| Secondary Chamber |                             |                          |      |        |                     |

Stack Height: \_\_\_\_\_ ft. Stack Diameter \_\_\_\_\_ Stack Temp. \_\_\_\_\_

Gas Flow Rate: \_\_\_\_\_ ACFM \_\_\_\_\_ DSCFM\* Velocity \_\_\_\_\_ FPS

\*If 50 or more tons per day design capacity, submit the emissions rate in grains per standard cubic foot dry gas corrected to 50% excess air.

Type of pollution control device:  Cyclone  Wet Scrubber  Afterburner  Other (specify) \_\_\_\_\_

Brief description of operating characteristics of control devices: \_\_\_\_\_

Ultimate disposal of any effluent other than that emitted from the stack (scrubber water, ash, etc.): \_\_\_\_\_

### SECTION V: SUPPLEMENTAL REQUIREMENTS

Please provide the following supplements where required for this application.

1. Total process input rate and product weight – show derivation. See Attachment A
2. To a construction application, attach basis of emission estimate (e.g., design calculations, design drawings, pertinent manufacturer's test data, etc.) and attach proposed methods (e.g., FR Part 60 Methods 1, 2, 3, 4, 5) to show proof of compliance with applicable standards. To an operation application, attach test results or methods used to show proof of compliance. Information provided when applying for an operation permit from a construction permit shall be indicative of the time at which the test was made. See Attachments B-1 and B-2
3. Attach basis of potential discharge (e.g., emission factor, that is, AP42 test). See Attachments B-1 and B-2
4. With construction permit application, include design details for all air pollution control systems (e.g., for baghouse include cloth to air ratio; for scrubber include cross-section sketch, etc.). See Attachment C
5. With construction permit application, attach derivation of control device(s) efficiency. Include test or design data. Items 2, 3, and 5 should be consistent: actual emissions = potential (1-efficiency). See Attachments B-1 and B-2
6. An 8½" x 11" flow diagram which will, without revealing trade secrets, identify the individual operations and/or processes. Indicate where raw materials enter, where solid and liquid waste exit, where gaseous emissions and/or airborne particles are evolved and where finished products are obtained. See Attachments D-1 and D-2
7. An 8½" x 11" plot plan showing the location of the establishment, and points of airborne emissions, in relation to the surrounding area, residences and other permanent structures and roadways (Example: Copy of relevant portion of USGS topographic map). See Attachment E
8. An 8½" x 11" plot plan of facility showing the location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram. See Attachment E

- 9. An application fee of \$20, unless exempted by Section 17-4.05(3), F.A.C. The check should be made payable to the Department of Environmental Regulation.
- 10. With an application for operation permit, attach a Certificate of Completion of Construction indicating that the source was constructed as shown in the construction permit.

**SECTION VI: BEST AVAILABLE CONTROL TECHNOLOGY**

A. Are standards of performance for new stationary sources pursuant to 40 C.F.R. Part 60 applicable to the source?  
 Yes  No

| Contaminant | Rate or Concentration |
|-------------|-----------------------|
|             |                       |
|             |                       |
|             |                       |
|             |                       |

B. Has EPA declared the best available control technology for this class of sources (If yes, attach copy)  Yes  No

| Contaminant | Rate or Concentration |
|-------------|-----------------------|
|             |                       |
|             |                       |
|             |                       |
|             |                       |

C. What emission levels do you propose as best available control technology?

| Contaminant | Rate or Concentration |
|-------------|-----------------------|
|             |                       |
|             |                       |
|             |                       |
|             |                       |

D. Describe the existing control and treatment technology (if any).

- |                           |                      |
|---------------------------|----------------------|
| 1. Control Device/System: | 4. Capital Costs:    |
| 2. Operating Principles:  | 6. Operating Costs:  |
| 3. Efficiency: *          | 8. Maintenance Cost: |
| 5. Useful Life:           |                      |
| 7. Energy:                |                      |
| 9. Emissions:             |                      |

| Contaminant | Rate or Concentration |
|-------------|-----------------------|
|             |                       |
|             |                       |
|             |                       |
|             |                       |

\*Explain method of determining D 3 above.

10. Stack Parameters

- |               |      |                 |     |
|---------------|------|-----------------|-----|
| a. Height:    | ft.  | b. Diameter:    | ft. |
| c. Flow Rate: | ACFM | d. Temperature: | °F  |
| e. Velocity:  | FPS  |                 |     |

E. Describe the control and treatment technology available (As many types as applicable, use additional pages if necessary).

1.

- a. Control Device:
- b. Operating Principles:
  
- c. Efficiency\*:
- d. Capital Cost:
- e. Useful Life:
- f. Operating Cost:
- g. Energy\*:
- h. Maintenance Cost:
- i. Availability of construction materials and process chemicals:
  
- j. Applicability to manufacturing processes:
- k. Ability to construct with control device, install in available space, and operate within proposed levels:

2.

- a. Control Device:
- b. Operating Principles:
  
- c. Efficiency\*:
- d. Capital Cost:
- e. Useful Life:
- f. Operating Cost:
- g. Energy\*\*:
- h. Maintenance Costs:
- i. Availability of construction materials and process chemicals:
  
- j. Applicability to manufacturing processes:
- k. Ability to construct with control device, install in available space, and operate within proposed levels:

\*Explain method of determining efficiency.

\*\*Energy to be reported in units of electrical power — KWH design rate.

3.

- a. Control Device:
- b. Operating Principles:
  
- c. Efficiency\*:
- d. Capital Cost:
- e. Life:
- f. Operating Cost:
- g. Energy:
- h. Maintenance Cost:

\*Explain method of determining efficiency above.

- i. Availability of construction materials and process chemicals:
- j. Applicability to manufacturing processes:
- k. Ability to construct with control device, install in available space and operate within proposed levels:

4.

- a. Control Device
- b. Operating Principles:
- c. Efficiency\*:
- d. Capital Cost:
- e. Life:
- f. Operating Cost:
- g. Energy:
- h. Maintenance Cost:
- i. Availability of construction materials and process chemicals:
- j. Applicability to manufacturing processes:
- k. Ability to construct with control device, install in available space, and operate within proposed levels:

F. Describe the control technology selected:

- 1. Control Device:
- 2. Efficiency\*:
- 3. Capital Cost:
- 4. Life:
- 5. Operating Cost:
- 6. Energy:
- 7. Maintenance Cost:
- 8. Manufacturer:
- 9. Other locations where employed on similar processes:

a.

- (1) Company:
- (2) Mailing Address:
- (3) City:
- (4) State:
- (5) Environmental Manager:
- (6) Telephone No.:

\*Explain method of determining efficiency above.

(7) Emissions\*:

| Contaminant | Rate or Concentration |
|-------------|-----------------------|
| _____       | _____                 |
| _____       | _____                 |
| _____       | _____                 |

(8) Process Rate\*:

b.

- (1) Company:
- (2) Mailing Address:
- (3) City:
- (4) State:

\*Applicant must provide this information when available. Should this information not be available, applicant must state the reason(s) why.



(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions\*:

Contaminant

Rate or Concentration

| Contaminant | Rate or Concentration |
|-------------|-----------------------|
|             |                       |
|             |                       |
|             |                       |

(8) Process Rate\*:

10. Reason for selection and description of systems:

\*Applicant must provide this information when available. Should this information not be available, applicant must state the reason(s) why.

SECTION VII - PREVENTION OF SIGNIFICANT DETERIORATION

A. Company Monitored Data

1. \_\_\_\_\_ no sites \_\_\_\_\_ TSP \_\_\_\_\_ ( ) SO2\* \_\_\_\_\_ Wind spd/dir
Period of monitoring \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_ to \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_
month day year month day year

Other data recorded \_\_\_\_\_

Attach all data or statistical summaries to this application.

2. Instrumentation, Field and Laboratory

a) Was instrumentation EPA referenced or its equivalent? \_\_\_\_\_ Yes \_\_\_\_\_ No

b) Was instrumentation calibrated in accordance with Department procedures? \_\_\_\_\_ Yes \_\_\_\_\_ No \_\_\_\_\_ Unknown

B. Meteorological Data Used for Air Quality Modeling

1. \_\_\_\_\_ Year(s) of data from \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_ to \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_
month day year month day year

2. Surface data obtained from (location) \_\_\_\_\_

3. Upper air (mixing height) data obtained from (location) \_\_\_\_\_

4. Stability wind rose (STAR) data obtained from (location) \_\_\_\_\_

C. Computer Models Used

1. \_\_\_\_\_ Modified? If yes, attach description.

2. \_\_\_\_\_ Modified? If yes, attach description.

3. \_\_\_\_\_ Modified? If yes, attach description.

4. \_\_\_\_\_ Modified? If yes, attach description.

Attach copies of all final model runs showing input data, receptor locations, and principle output tables.

D. Applicants Maximum Allowable Emission Data

Table with 2 columns: Pollutant, Emission Rate. Rows for TSP and SO2 with blank lines for values and units (grams/sec).

E. Emission Data Used in Modeling

Attach list of emission sources. Emission data required is source name, description on point source (on NEDS point number), UTM coordinates, stack data, allowable emissions, and normal operating time.

F. Attach all other information supportive to the PSD review.

\*Specify bubbler (B) or continuous (C).

G. Discuss the social and economic impact of the selected technology versus other applicable technologies (i.e., jobs, payroll, production, taxes, energy, etc.). Include assessment of the environmental impact of the sources.

H. Attach scientific, engineering, and technical material, reports, publications, journals, and other competent relevant information describing the theory and application of the requested best available control technology.

## SECTION II: A

This project involves the installation of an upflow counter current spray scrubber to control fluoride and diatomaceous emissions during phosphoric acid defluorination. The scrubber is a Rigidome 4837 which is a 16'x4' round scrubber of fibercast construction. Gases enter the scrubber near the bottom and flow upward. As the gases flow upward, absorption is accomplished by exposure to water droplets with a mean diameter of 100 microns. The sprays are of hollow cone design with a 0.140" orifice. There are eight spray headers mounted in pairs 90° apart with four sprays per header. At approximately 50 psig each spray delivers approximately 1.1 gpm in a 90° cone spray pattern. There is a 1.5 inch Beco demisting/mass transfer pad near the top of the scrubber at the 14' level. Water utilized by the scrubber will be once through fresh water at a rate of approximately 30-40 gpm. Air flow through the scrubber at approximately 3,000 acfm will be provided by a 10 HP Hartzell fan, or equivalent. This scrubber system will have three pick-up points, two covered phosphoric acid defluorinating tanks and the diatomaceous slurry tank. Emissions from these three points will be conveyed through 8" ducts which converge into a single duct at the scrubber. The phosphoric acid defluorination operation is a batch type operation with the total of the two defluorinating tanks constituting a batch. Maximum emissions occur during the slurring of the diatomaceous earth (D.E.), which takes approximately one hour, and during an approximately two-hour period when the acid is heated and sparged with air and steam. The two-hour period associated with the acid overlaps the D.E. slurring period. Therefore, there is essentially only a two-hour period in which the fluoride emissions reach an abrupt peak and taper off drastically, and the dust from the D.E. slurring reaches an abrupt peak and ends. Therefore, the emission control equipment proposed for the phosphoric acid defluorination process should result in compliance for this source.

In the phosphoric acid defluorinating process a diatomaceous earth slurry and caustic are mixed with heated, 110°-140°F, phosphoric acid. The mixture is sparged with compressed air and steam, causing the fluorides to be removed primarily by precipitation and secondarily by stripping. While there will be many other species of the H<sub>3</sub>PO<sub>4</sub>, NaOH, and SiO<sub>2</sub> involved, the reactions for fluoride removal are as follows:

1.  $4\text{HF} + \text{SiO}_2 \rightarrow 2\text{H}_2\text{O} + \text{SiF}_4$
2.  $3\text{SiF}_4 + 2\text{H}_2\text{O} \rightarrow 2\text{H}_2\text{SiF}_6 + \text{SiO}_2$
3.  $\text{H}_2\text{SiF}_6 + 2\text{NaOH} \rightarrow \text{Na}_2\text{SiF}_6 + 2\text{H}_2\text{O}$   
where:  
SiF<sub>4</sub> - Silicon Tetrafluoride  
H<sub>2</sub>SiF<sub>6</sub> - Fluosilicic Acid  
Na<sub>2</sub>SiF<sub>6</sub> - Sodium Fluosilicate

### Additional Notes

Acid Lbs/Hr (two tanks, 12,000 gals/tank)

24,000 gals. acid @ 1.650 typical sp.g. and 52% P<sub>2</sub>O<sub>5</sub>

$$\frac{(24,000 \text{ gals.} \times 8.337 \text{ lbs/gal}) \times 1.650}{4 \text{ hours}} = 82,536 \text{ lbs/hr} = 21.5 \text{ tons P}_2\text{O}_5/\text{hr}$$

Caustic Lbs/Hr (two tanks, 160 gals/tank)

320 gals. caustic @ 1.525 typical sp.g.

$$\frac{(320 \text{ gals.} \times 8.337 \text{ lbs/gal}) \times 1.525}{4 \text{ hours}} = 1,017 \text{ lbs/hr}$$

D.E. Lbs/Hr (two tanks, 750 lbs/tank)

$$\frac{1,500 \text{ lbs.}}{4 \text{ hours}} = 375 \text{ lbs/hr}$$

Water Lbs/Hr (two tanks, 745 lbs/tank)

$$\frac{1,490 \text{ lbs. (as steam)}}{4 \text{ hours}} = 373 \text{ lbs/hr}$$

Fluoride Allowable = 0.04 lbs/ton of P<sub>2</sub>O<sub>5</sub>

Emissions based on the Occidental BACT determination for a similar process.

Emissions Allowable:

$$0.04 \text{ lbs.} \times 21.5 \text{ tons P}_2\text{O}_5/\text{hr} = 0.86 \text{ lbs/hr}$$

Particulate Allowable = 0.015 grains/ACF

Emissions based on the Occidental BACT determination for a similar process.

Emissions Allowable:

$$\frac{0.015 \text{ gr/ACF} (3,000 \text{ ACFM} \times 60 \text{ min/hr})}{7,000 \text{ gr/lb}} = 0.39 \text{ lbs/hr}$$

ATTACHMENT A

Total Process Input Rate

82,536 lbs/hr Phosphoric Acid @ 52% P<sub>2</sub>O<sub>5</sub> + 375 lbs/hr  
Diatomaceous Earth + 1,017 lbs/hr Sodium Hydroxide @ 50% NaOH  
+ 373 lbs/hr water = 84,301 lbs/hr Total Process Input Rate.

Product Rate

82,536 lbs/hr Phosphoric Acid @ 52% P<sub>2</sub>O<sub>5</sub> + 375 lbs/hr  
Diatomaceous Earth + 1,017 lbs/hr Sodium Hydroxide @ 50% NaOH  
+ 373 lbs/hr water = 84,301 lbs/hr Total Product Rate.

ATTACHMENT B-1

Fluoride Emissions (Actual)

Estimated Scrubber Loading: 31.28 lbs/hr  
100% - 99% (Scrubber Removal Efficiency) = 1.0%  
31.28 lbs/hr Loading to Scrubber x 1.0% = 0.3128 lbs/hr  
Emissions

0.3128 lbs/hr Emissions x 2,080 hours Annual Operating Time =  
650.52 lbs/year Emissions ÷ 2,000 lbs/ton =  
0.3253 tons/year Emissions

Potential Emissions

31.28 lbs/hr Load to Scrubber  
31.28 lbs/hr x 2,080 hours Annual Operating Time =  
65,062 lbs/year Emissions ÷ 2,000 lbs/ton =  
32.53 tons/year Potential Emissions

Fluoride emission compliance will be demonstrated using Method 13B.

ATTACHMENT B-2

Particulate Emissions (Actual)

Estimated Scrubber Loading: 3.60 lbs/hr

An actual efficiency of particulate removal is not available. However, AMAX will meet or exceed the 0.015 grain/ACF set forth in the Occidental BACT determination for particulate emissions for a like process. The above can be demonstrated by the following:

$$3.60 \text{ lbs/hr} \times 7,000 \text{ gr/lb} = 25,200 \text{ gr/hr}$$
$$25,200 \text{ gr/hr} \div (3,000 \text{ ACFM} \times 60 \text{ min/hr}) = 0.140 \text{ gr/ACF}$$

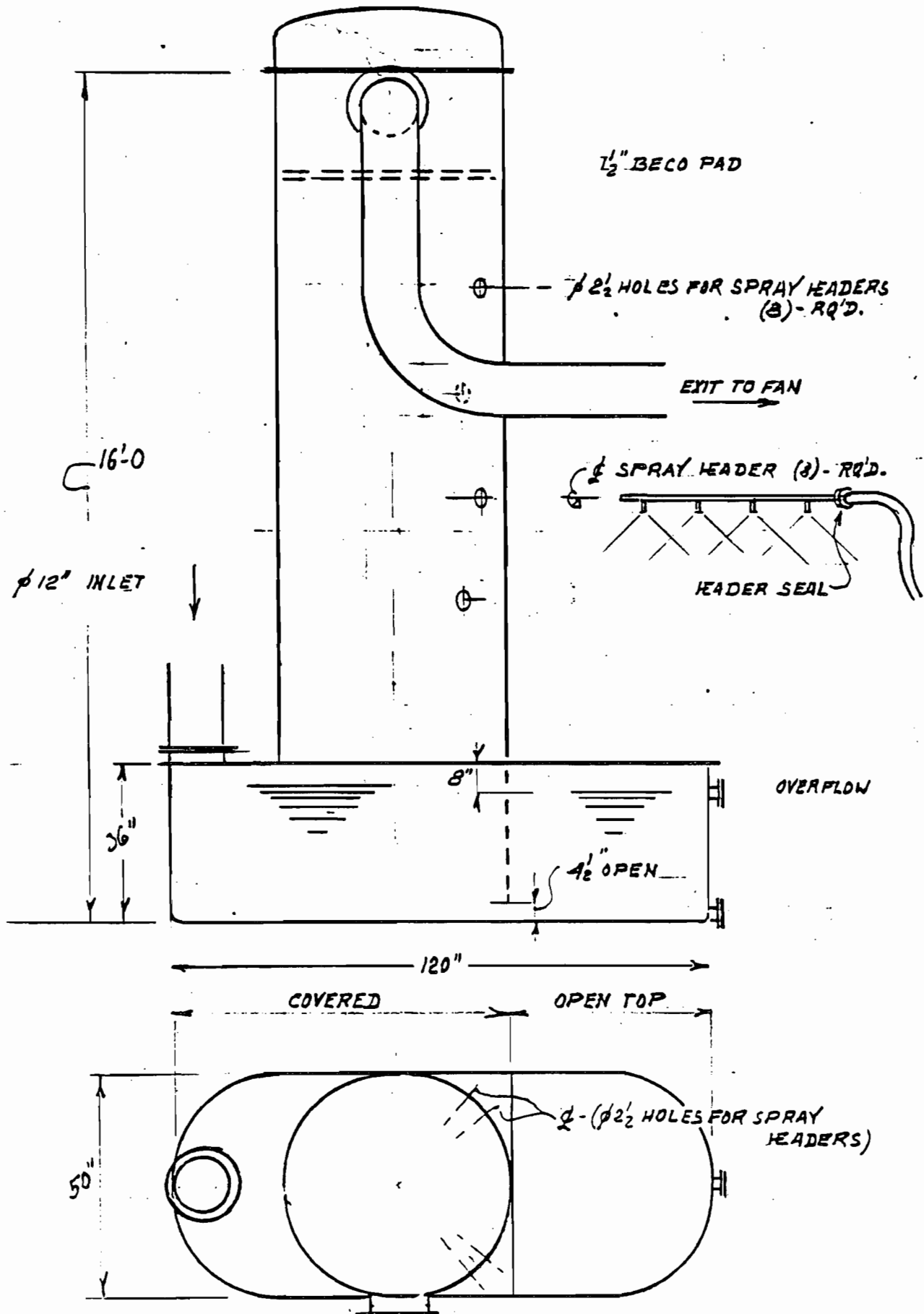
$$\frac{0.140 \text{ gr/ACF} - 0.015 \text{ gr/ACF}}{0.140 \text{ gr/ACF}} \times 100 = 89.29\% \text{ Removal}$$

Potential Emissions\*

3.60 lbs/hr Loading to Scrubber  
3.60 lbs/hr x 2,080 hours Annual Operating Time =  
7,488 lbs/year Emissions ÷ 2,000 lbs/ton =  
3.744 tons/year Potential Emissions

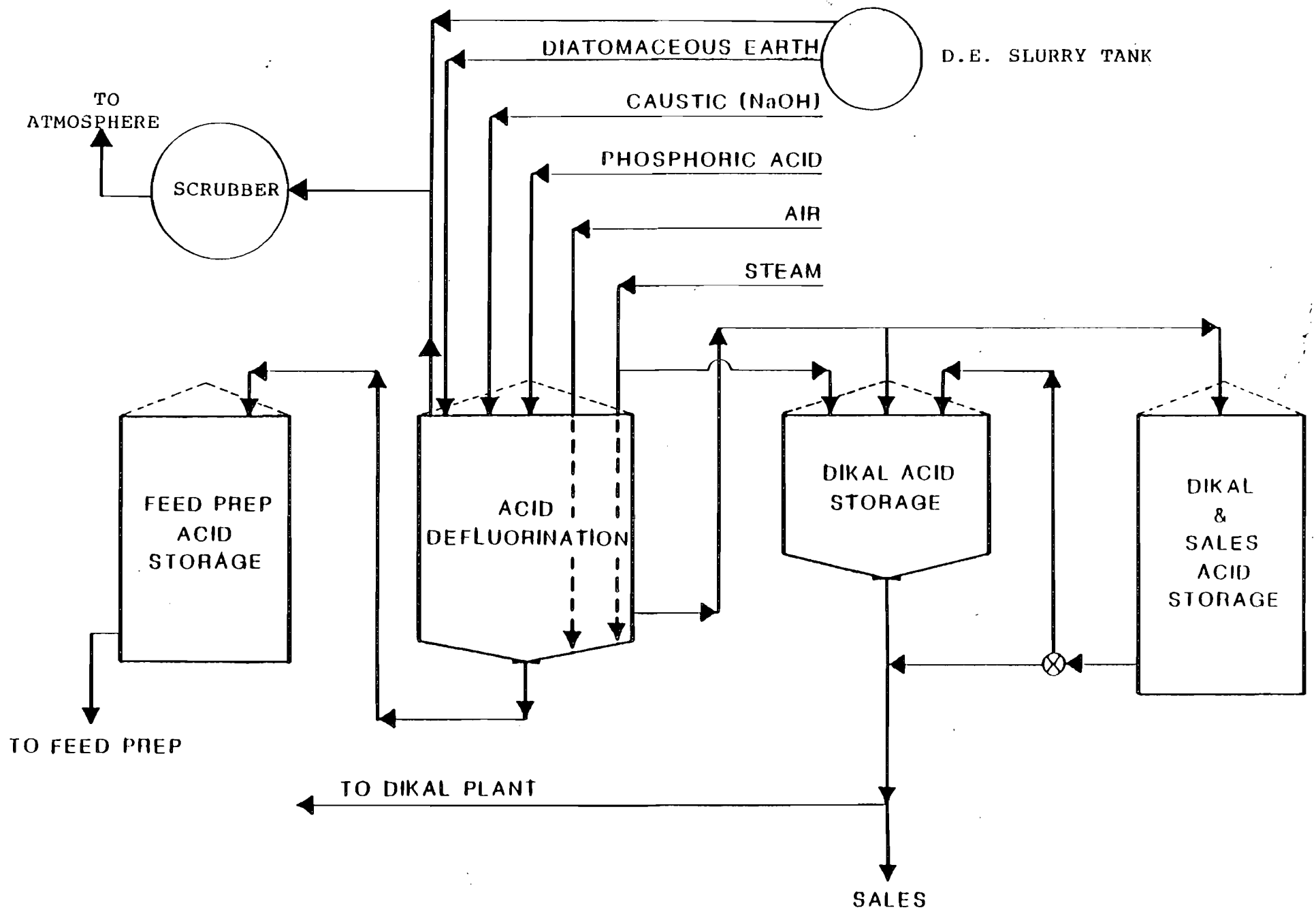
\*Potential emissions are based on the data collected during the peak D.E. emission period; to reflect the maximum potential emissions. The peak D.E. emission period would not be applicable to the entire 2,080 annual operating hours. However, we are showing the maximum possible particulate emissions from this unit.

Particulate emission compliance will be demonstrated using Method 5.



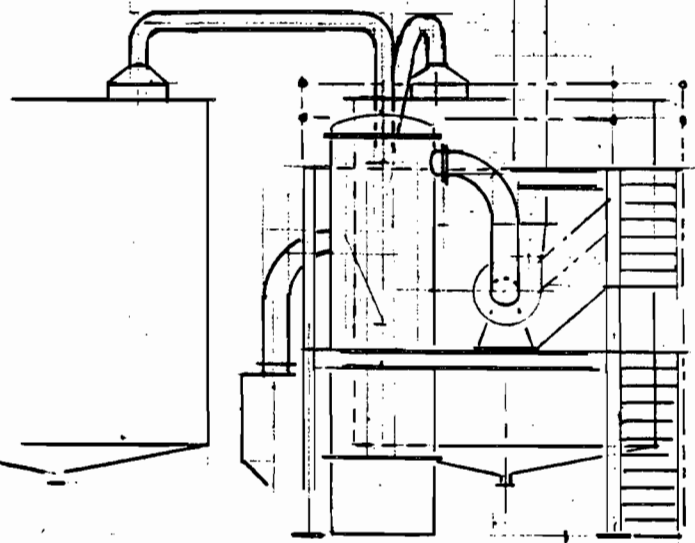
DEFLU PLANT  
SCRUBBER C-78



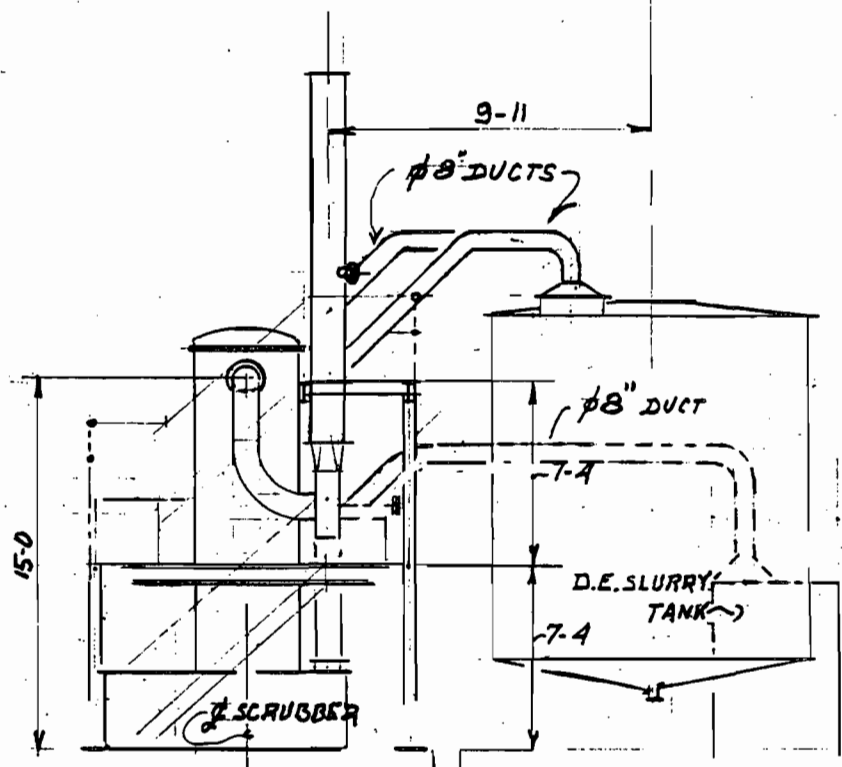


DEFLUORINATED PHOSPHORIC ACID FLOW SHEET

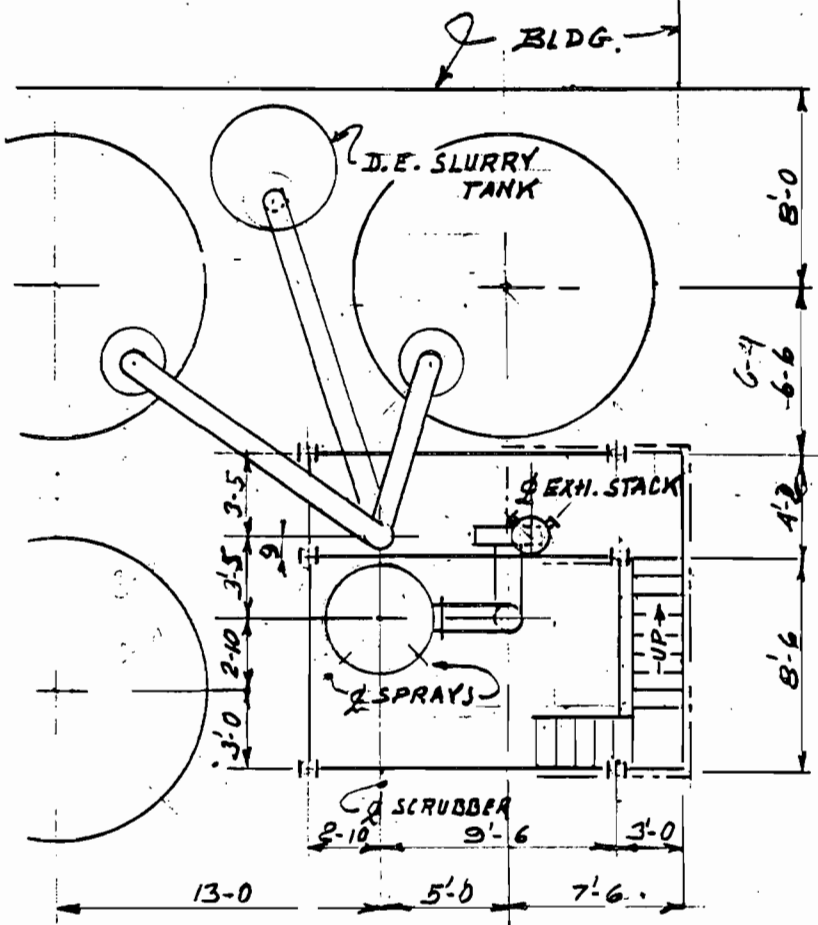
EL. 28'



SOUTH ELEVATION

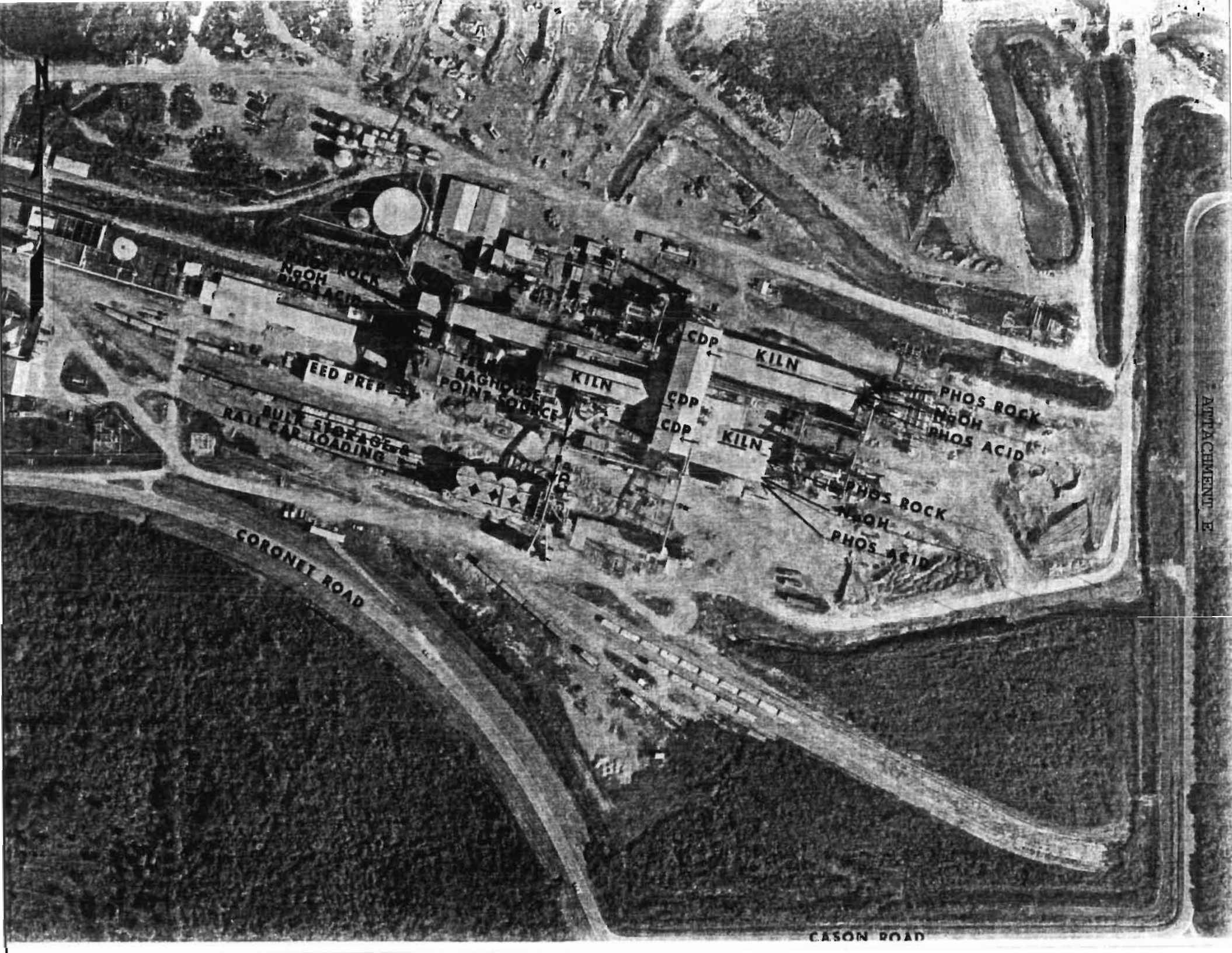


EAST ELEVATION



PLAN

PRESSURE DROP : 5.3" 2964 cfm  
 HARTZEL 19 FAN 2192 RPM 10 HP



ATTACHMENT E

CASON ROAD

November 7, 1984

Mr. J. Floyd  
 Plant Engineer  
 Amax Chemical  
 P.O. Box 790  
 Plant City, Florida 33566

Subject: A scrubber for a point source

Amax plans to use one of four Rigidome 4837 scrubbers, used originally for the C-78 project in 1973. The scrubber is 16' high by 4' in diameter. A 1½" thick Beco pad demister is located at the 14' level. A domed 2' high cover serves to remove the demisted gas for transport to the blower. (See Plan: East & south elevation.) Eight spray headers are mounted in pairs at right angle to each other. Each pair is separated vertically by a distance of 2'. Each pair is offset a few inches horizontally to assure full spray coverage. The sprays produce a 90° cone with 50 psig water delivering 1.1 gpm. The headers are sealed by means of rubber stoppers to fill the entrance hole. The far side of the header rests on a 2" saddle mounted on the inside wall. A Hartzell fan operating at 3000 scfm will be used for scrubber air transport.

The following phases will be discussed for fluoride and dust removal:  
 a) Pollution collection from the source. b) Scrubber action. c) Air pollution impact.

a) Pollution collection: There will be three sources; Two 12' diameter acid reaction tanks and one Kennite slurry mixer. They will be connected to the scrubber sump by means of 8" ducts tied to a single inlet duct at the scrubber. Consequently each source will be swept by approximately 1000 scfm air.

Fluoride: Calculations are based on the worst conditions, viz: Heated acid producing 1.825 gr/ft<sup>3</sup> of tank acid surface for approximately 2 hours. Under these conditions as air sweeps the surface, 1.825 gr/ft<sup>3</sup> of fluorine will emerge from the surface as vapor. The covered tanks will have an open space of about 1' above the acid. Then F produced each minute is:

$$1) F \text{ gr/ft}^3 \text{ two tanks} = 1.825 \times 2 = 3.650$$

Kennite dust: The dust loading found at the slurry tank:

$$2) \text{ gr/ft}^3 = 0.42$$

Then with an air sweep of 1000 scfm, the grains per minute is:

$$3) \text{ gr/min} = 0.42 \times 1000 = 420$$

$$4) \text{ lbs/min} = \frac{420}{7000} = 0.060*$$

\* An isokinetic deviation occurs, that is, gas or dust entering a duct from a large open area at 1000 scfm, acts like a funnel drawing in more pollutant than found in the air above the slurry or acid. Consequently the loading the scrubber receives may be a little higher.

Kennite: Supplier's name brand of diatomaceous earth.

b) Scrubber action:

Gas absorption in water is dependent upon the effective surface area covered by spray action in a given time and then equating that to the scrubber cross sectional area that the air must traverse. Plant City pond water is maintained at a pH of about 3.0. At this pH there are many ions which will combine with fluoride, both positive and negative, which will aid in the reduction of volatile escape. However, it is understood that Amax plans to use well water.

Scrubber dimensions: The inside dimensions are 4' diameter by 14' to the demister. A sump overflow at 2' leaves an active height of 12'. Sprays: The scrubber manifolds are fitted with Spraying Systems hollow cone sprays with an orifice of 0.140" and operating at 50 psig, a cone of 90° is produced at a usable vertical coverage of 2'. See page 1 for other dimensions.) Average spray drop size is 100 μ\* in diameter using 1.1 gpm water.

5) Drop volume:  $cc = \frac{4}{3}\pi r^3$ . Drop radius:  $cm = \frac{100}{2} \times 10^{-4} = 5.0 \times 10^{-3}$

6) Vol. cc/drop =  $\frac{4}{3}\pi(5.0 \times 10^{-3})^3 = 5.24 \times 10^{-7}$

Gas velocity: (counter flow.)  $r=2'$

7)  $ft/sec = \frac{3000}{\pi r^2 \times 60} = 4.0 ft/sec$

8) Drops/spray sec =  $\frac{1.1 \times 3785.4^{**}}{60 \times 5.24 \times 10^{-7}} = 13.244 \times 10^7$

Area drops/sec:

Since the area of a sphere is  $4\pi r^2$ , only one half of the area is contacted by the rising gas. Neglecting the other half, which is also contacted, (but to a lesser degree) because of the random action of a gas, the area calculated will be  $2\pi r^2$ .

9) Area  $ft^2 / spray sec = \frac{13.244 \times 10^7 \times 2\pi(5.0 \times 10^{-3})^2}{929.03^{***}} = 22.4 ft^2 / spray sec$

Each manifold spray pair has 8 sprays and each pair is separated vertically by a distance of 2', then the area covered by each pair becomes: Area  $ft^2/sec = 8 \times 22.4 = 179.2$ .

The gas rises at a rate of 4'/sec, therefore it traverses two manifold pairs each second. The area of the rising gas is  $\pi r^2$ , and  $r=2$ , then the area becomes  $A = \pi 4 = 12.6 ft^2$ . Since it moves vertically 2' each second, then the number of gas areas contacting the water spray curtains becomes:

10)  $No = \frac{2 \times 179.2}{12.6} = 28.4$  and since it takes 2 seconds for the gas to traverse the entire scrubber the number becomes:  $No = 2 \times 28.4 = 56.8$

\* is  $10^{-6}$  meters

\*\* cc/gal

\*\*\*  $\frac{2}{ft^2}$

Dust removal:

Screen sizes:

| $\mu$ | %    |
|-------|------|
| -20   | 98.0 |
| -10   | 94.5 |
| -6    | 73.0 |
| -2    | 27.0 |
| -1    | 17.0 |
| -0.5  | 10.0 |
| -0.25 | 5.0  |

$$\text{Average particle size} = \frac{\sum d_i \times (100 - \%)}{n}^{1,+2,+}$$

$$= 0.74 \mu$$

The dust size is still many times larger than fluoride vapor, however the large area covered by the spray film may assure adequate dust removal. Tests should be conducted to confirm this statement.

c) Air pollution impact:

It is understood that fresh water will be used.

Fluoride: Entering the scrubber:

$$11) \text{ lbs F/hr} = \frac{3.650 \times 60 \times 1000}{7000} = 31.284$$

$$12) \text{ Water lbs/hr} = 32 \times 8.345 \times 60 \times 1.1 = 17,625$$

$$13) \%HF = \frac{31.284 \times 20/19 \times 100}{17,625} = 0.1868$$

Using the table from patent No 39,423 -- 1947\* and assume a straight line function, and extrapolating to %HF = 0.1868 at 80° F then:

$$\%HF/\text{lbs dry air} = 6.576 \times 10^{-6}$$

$$14) \text{ Lbs dry air/hr} = \frac{3000 \times 60 \times \left[ \frac{29.92 - 1.032^{**}}{29.92} \right] \times 29.00 \times 528}{359 \times 540} = 13,727$$

$$15) \text{ lbs HF/hr} = \frac{13,727 \times 6.576 \times 10^{-6}}{10^2} = 9.027 \times 10^{-4}$$

Dust:

Amax now employs a small water scrubber to remove Kennite dust which is doing a satisfactory job. It is anticipated that the C-78 scrubber should perform satisfactorially, however tests should be conducted.

Comments:

Based on the above analysis, the Rigidome scrubber used in the 1973 C-78 tests, should remove fluoride vapors adequately.

Louis John Lamb  
Consultant

\* See attached patent computer printout.

\*\* Water vapor pressure, "Hg at 80° F.

**BEST AVAILABLE COPY**

TABLE OF HF VAPOR COMPOSITION  
 DERIVED FROM TVA DATA  
 SROSHEER ET AL, I&EC 39, 423, 1947

ZHF  
 IN LIQUOR

LBS HF  
PER LB DRY AIR

|      | 80 DEG F   | 100 DEG F  | 120 DEG F  | 140 DEG F  |
|------|------------|------------|------------|------------|
| .1   | 3.92672E-6 | 7.86430E-6 | 1.54041E-5 | 3.01668E-5 |
| .2   | 6.97336E-6 | 1.39763E-5 | 2.73761E-5 | 5.36096E-5 |
| .3   | 9.75996E-6 | 1.95463E-5 | 3.82839E-5 | 7.49660E-5 |
| .4   | 1.23345E-5 | 2.48021E-5 | 4.85766E-5 | 9.51156E-5 |
| .5   | 1.49040E-5 | 2.98474E-5 | 5.84564E-5 | 1.14454E-4 |
| .6   | 1.73473E-5 | 3.47407E-5 | 6.80379E-5 | 1.33207E-4 |
| .7   | 1.97343E-5 | 3.95193E-5 | 7.73942E-5 | 1.51516E-4 |
| .8   | 2.20766E-5 | 4.42091E-5 | 8.65759E-5 | 1.69481E-4 |
| .9   | 2.43840E-5 | 4.88239E-5 | 9.56199E-5 | 1.87174E-4 |
| 1.   | 2.66637E-5 | 5.33930E-5 | 1.04554E-4 | 2.04650E-4 |
| 1.5  | 2.66637E-5 | 5.33930E-5 | 1.04554E-4 | 2.04650E-4 |
| 2    | 3.78097E-5 | 7.57053E-5 | 1.48220E-4 | 2.90027E-4 |
| 2.5  | 4.37914E-5 | 9.76839E-5 | 1.91216E-4 | 3.74028E-4 |
| 3    | 5.98116E-5 | 1.19734E-4 | 2.34334E-4 | 4.58200E-4 |
| 3.5  | 7.09882E-5 | 1.42092E-4 | 2.78033E-4 | 5.43435E-4 |
| 4    | 8.24012E-5 | 1.64917E-4 | 3.22625E-4 | 6.30336E-4 |
| 4.5  | 9.41100E-5 | 1.88328E-4 | 3.68338E-4 | 7.19343E-4 |
| 5    | 1.06163E-4 | 2.12419E-4 | 4.15359E-4 | 8.10810E-4 |
| 5.5  | 1.18600E-4 | 2.37272E-4 | 4.63842E-4 | 9.05033E-4 |
| 6    | 1.31458E-4 | 2.62959E-4 | 5.13925E-4 | 1.00227E-3 |
| 6.5  | 1.44770E-4 | 2.89546E-4 | 5.65735E-4 | 1.10277E-3 |
| 7    | 1.58568E-4 | 3.17094E-4 | 6.19390E-4 | 1.20674E-3 |
| 7.5  | 1.72880E-4 | 3.45662E-4 | 6.75003E-4 | 1.31439E-3 |
| 8    | 1.87738E-4 | 3.75309E-4 | 7.32685E-4 | 1.42594E-3 |
| 8.5  | 2.03170E-4 | 4.06093E-4 | 7.92543E-4 | 1.54158E-3 |
| 9    | 2.19205E-4 | 4.38069E-4 | 8.54688E-4 | 1.66151E-3 |
| 9.5  | 2.35872E-4 | 4.71296E-4 | 9.19227E-4 | 1.78593E-3 |
| 10   | 2.53200E-4 | 5.05831E-4 | 9.86269E-4 | 1.91505E-3 |
| 10.5 | 2.71220E-4 | 5.41733E-4 | 1.05593E-3 | 2.04906E-3 |
| 11   | 2.89963E-4 | 5.79062E-4 | 1.12831E-3 | 2.18817E-3 |
| 11.5 | 3.09453E-4 | 6.17880E-4 | 1.20354E-3 | 2.33260E-3 |
| 12   | 3.29739E-4 | 6.58248E-4 | 1.28173E-3 | 2.48256E-3 |
| 12.5 | 3.50637E-4 | 7.00232E-4 | .001363    | 2.63828E-3 |
| 13   | 3.72737E-4 | 7.43896E-4 | 1.44748E-3 | 2.79997E-3 |
| 13.5 | 3.95624E-4 | 7.89310E-4 | 1.53530E-3 | 2.96788E-3 |
| 14   | 4.19380E-4 | 8.36543E-4 | 1.62653E-3 | 3.14224E-3 |
| 14.5 | 4.44101E-4 | 8.85668E-4 | 1.72147E-3 | 3.32330E-3 |
| 15   | 4.69815E-4 | 9.36759E-4 | 1.82010E-3 | 3.51132E-3 |
| 15.5 | 4.96566E-4 | 9.89903E-4 | 1.92262E-3 | 3.70656E-3 |
| 16   | 5.24394E-4 | 1.04515E-3 | 2.02913E-3 | 3.90903E-3 |
| 16.5 | 5.53341E-4 | 1.10261E-3 | 2.13993E-3 | 4.11982E-3 |
| 17   | 5.83450E-4 | 1.16226E-3 | 2.25504E-3 | 4.33841E-3 |
| 17.5 | 6.14766E-4 | 1.22409E-3 | 2.37467E-3 | 4.56533E-3 |
| 18   | 6.47333E-4 | 1.28809E-3 | 2.49893E-3 | 4.80103E-3 |
| 18.5 | 6.81187E-4 | 1.35424E-3 | 2.62817E-3 | 5.04579E-3 |
| 19   | 7.16388E-4 | 1.42254E-3 | 2.76241E-3 | 5.29971E-3 |
| 19.5 | 7.52988E-4 | 1.49304E-3 | 2.90188E-3 | 5.56343E-3 |
| 20   | 7.91011E-4 | 1.57477E-3 | 3.04660E-3 | 5.83731E-3 |
| 20.5 | 8.30472E-4 | 1.65885E-3 | 3.19700E-3 | 6.12142E-3 |

DEPARTMENT OF ENVIRONMENTAL REGULATION

## INTEROFFICE MEMORANDUM

|             |               |
|-------------|---------------|
| To: _____   | Loctn.: _____ |
| To: _____   | Loctn.: _____ |
| To: _____   | Loctn.: _____ |
| From: _____ | Date: _____   |

TO: Jacob D. Varn  
 FROM: Steve Smallwood  
 DATE: October 24, 1980  
 SUBJ: BACT - Occidental Chemical Company  
 Phosphoric Acid Feed Preparation

Facility: A 422 TPD  $P_2O_5$  acid defluorination plant where diatomaceous earth is mixed with 54 percent phosphoric acid, heated and then air is blown through the mixture to remove fluorides from the acid. The fluoride is removed from this air with a cross-flow packed scrubber before the air is discharged to the atmosphere. Dust from the diatomaceous earth handling equipment is controlled with a baghouse.

BACT Determination Requested by the Applicant:

Fluoride: 0.05 lb F/ton  $P_2O_5$  feed

Particulate: 1.26 lb/hr.

Date of Receipt of a BACT Application:

October 1, 1980

Date of Publication in the Florida-Administrative Weekly:

October 10, 1980

Study Group Members:

Johnny Cole, St. Johns River Subdistrict  
 Teresa Heron, Bureau of Air Quality Management  
 Bob King, Bureau of Air Quality Management



Study Group Recommendation:

|              | Fluoride (lb F/TP <sub>2</sub> O <sub>5</sub> in.) | Particulate           |
|--------------|--|-----------------------|
| Johnny Cole  | 0.05   | 20% opacity           |
| Teresa Heron | 0.04   | 1.05 lb/hr (scrubber) |
| Bob King     | 0.02   | 0.21 lb/hr (baghouse) |

BACT Determination by the DER:

Maximum Allowable Emission Rate are as follows:

Fluoride - 0.04  $\frac{\text{lb. total F}}{\text{TP}_2\text{O}_5 \text{ input}}$  and 0.65 lb F/hr.

Particulate - 0.015 grains/ACF or 5% opacity

Compliance to be determined by reference methods 1, 2, 3, 4, 5, 9, 13A or 13B as published in 40 CFR 60, Appendix A or by other DER approved procedures. Minimum sample volume per run is 30 DSCF collected during an integral number of cycles over a period of 60 minutes or longer. Fluoride emission compliance test are to be conducted near permitted capacity during the time the process pond water is expected to be near its maximum annual temperature.

Justification of DER Determination:

The cross-flow packed scrubber and baghouses are the most satisfactory types of control devices for this service. The BACT standard can be met with properly designed, maintained and operated control devices. Lower fluoride emission from this plant is possible if the scrubber water is treated to remove fluoride. The expense of treating the water to obtain lower emission is not justified at this time.

Details of the Determination:

Details of the determination may be obtained by contacting:

Willard Hanks  
Department of Environmental Regulation  
2600 Blair Stone Road  
Tallahassee, Florida 32301

Jacob D. Varn  
Page Three

Recommendation from the Bureau of Air Quality Management:

By: Steve Smallwood for  
Steve Smallwood

Date: 10/28/80

Department of Environmental Regulation approval:

By: Jacob D. Varn  
Jacob D. Varn

Date: 29 OCT 1980

Attachment: Application  
Recommendation (3)

**AMAX** Chemical Corporation

A SUBSIDIARY OF AMAX INC.

P. O. BOX 790 ♦ PLANT CITY, FLORIDA 34289 ♦ (813) 752-1161

July 31, 1984

Mr. Dan Williams  
Air Permitting Section  
Department of Environmental Regulation  
Southwest District  
7601 Highway 301 North  
Tampa, Florida 33610

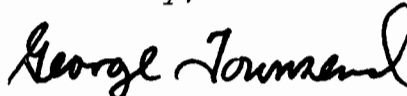
Dear Mr. Williams:

Please find attached four (4) copies of a construction permit application to install a wet scrubber at the Plant City facility.

Also attached is a check in the amount of \$500.00 to cover the application fee. A copy of the application and the appropriate fee have been transmitted to the Hillsborough County Environmental Protection Commission.

Should you have any question concerning this application, please let me know.

Sincerely,



George Townsend  
Environmental Supervisor

GT:cr

Attachments

cc: J. J. Lewis  
F. G. Mullins

**D. E. R.**

**AUG 10 1984**

**SOUTH WEST DISTRICT  
TAMPA**

# AMAX Chemical Corporation

A SUBSIDIARY OF AMAX INC.

P. O. BOX 790 ♦ PLANT CITY, FLORIDA 34289 ♦ (813) 752-1161

July 23, 1984

Mr. Dan Williams  
Air Permitting Section  
Department of Environmental Regulation  
Southwest District  
7601 Highway 301 North  
Tampa, FL 33610

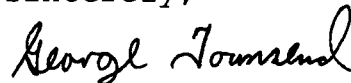
Dear Mr. Williams:

Please find attached four (4) copies of a construction permit application to install a fabric filter dust collector at the Amax Plant City facility.

Also attached is a check in the amount of \$750.00 to cover the application fee. A copy of the application and the appropriate fee have been transmitted to the Hillsborough County Environmental Protection Commission.

Should you have any questions concerning this application, please do not hesitate to let me know.

Sincerely,



George Townsend  
Environmental Supervisor

GT:cr

Attachments

cc: Mr. J. J. Lewis  
Mr. F. G. Mullins

**D. E. R.**

AUG 1 0 1984

SO  
EST DISTRICT  
TAMPA

STATE OF FLORIDA  
DEPARTMENT OF ENVIRONMENTAL REGULATION

Nº 84335

RECEIPT FOR APPLICATION FEES AND MISCELLANEOUS REVENUE

Received from Amara Chem. Corp. Date 8-14-84

Address 402 South Kentucky Ave. Dollars \$ 750.00

Applicant Name & Address same as above

Source of Revenue Conveyor Belt Transfer Point Dust Collector

Revenue Code 001031 Application Number AC29-091317

0022641

By Norothy Pelham

APPLICATION TRACKING SYSTEM

08/15/84

AFPL NO:091317

APPL RECVD:08/10/84 TYPE CODE:AC SUBCODE:75

LAST UPDATE:08/15/84

DER OFFICE RECVD:TPA DER OFFICE TRANSFER TO:\_\_\_ APPLICATION COMPLETE:\_\_\_/\_\_\_/\_\_\_

DER PROCESSOR:ESTLER

APPL STATUS:AC DATE:08/10/84 (ACTIVE/DENIED/WITHDRAWN/EXEMPT/ISSUED/GENERAL)

RELIEF:\_\_\_ (SSAC/EXEMPTIONS/VARIANCE)

(Y/N) N MANUAL TRACKING

DISTRICT:40 COUNTY:29

(Y/N) N DNR REVIEW REQD?

LAT/LONG:\_\_\_/\_\_\_

(Y/N) N PUBLIC NOTICE REQD?

BASIN-SEGMENT:\_\_\_

(Y/N) N GOV BODY LOCAL APPROVAL REQD?

COE #:\_\_\_\_\_

(Y/N) Y LETTER OF INTENT REQD? (I/ISSUE D/DENY)

ALT#:\_\_\_\_\_

PROJECT SOURCE NAME:CONVEYOR BELT TRANS. PT. DUST COLLE

STREET:CORONET ROAD

CITY:PLANT CITY

STATE:FL

ZIP:\_\_\_\_\_

PHONE:\_\_\_\_\_

APPLICATION NAME:AMAX PHOSPHATE, INC.

STREET:P O BOX 790

CITY:PLANT CITY

STATE:FL

ZIP:33566

PHONE:\_\_\_\_\_

AGENT NAME:LEWIS, J.J.

STREET:P O BOX 790

CITY:PLANT CITY

STATE:FL

ZIP:33566

PHONE:313-752-1161

FEE #1 DATE PAID:08/14/84

AMOUNT PAID:0750

RECEIPT NUMBER:00084335

|   |  |           |             |
|---|--|-----------|-------------|
| B | DATE APPLICANT INFORMED OF NEED FOR PUBLIC NOTICE    | - - -     | ___/___/___ |
| C | DATE DER SENT DNR APPLICATION/SENT DNR INTENT        | - - - - - | ___/___/___ |
| D | DATE DER REG. COMMENTS FROM GOV. BODY FOR LOCAL APP. | - -       | ___/___/___ |
| E | DATE #1 ADDITIONAL INFO REQ--REC FROM APPLICANT      | - - - - - | ___/___/___ |
| E | DATE #2 ADDITIONAL INFO REQ--REC FROM APPLICANT      | - - - - - | ___/___/___ |
| E | DATE #3 ADDITIONAL INFO REQ--REC FROM APPLICANT      | - - - - - | ___/___/___ |
| E | DATE #4 ADDITIONAL INFO REQ--REC FROM APPLICANT      | - - - - - | ___/___/___ |
| E | DATE #5 ADDITIONAL INFO REQ--REC FROM APPLICANT      | - - - - - | ___/___/___ |
| E | DATE #6 ADDITIONAL INFO REQ--REC FROM APPLICANT      | - - - - - | ___/___/___ |
| F | DATE GOVERNING BODY REQUESTED SURVEY RESULTS/REPORTS | - -       | ___/___/___ |
| G | DATE FIELD REPORT WAS REQ--REC                       | - - - - - | ___/___/___ |
| H | DATE DNR REVIEW WAS COMPLETED                        | - - - - - | ___/___/___ |
| I | DATE APPLICATION WAS COMPLETE                        | - - - - - | ___/___/___ |
| J | DATE GOVERNING BODY PROVIDED COMMENTS OR OBJECTIONS  | - -       | ___/___/___ |
| K | DATE NOTICE OF INTENT WAS SENT--REC TO APPLICANT     | - - - - - | ___/___/___ |
| L | DATE PUBLIC NOTICE WAS SENT TO APPLICANT             | - - - - - | ___/___/___ |
| M | DATE PROOF OF PUBLICATION OF PUBLIC NOTICE RECEIVED  | - -       | ___/___/___ |
| N | DATE WAIVER DATE BEGIN--END (DAY 90)                 | - - - - - | ___/___/___ |

COMMENTS:

STATE OF FLORIDA  
DEPARTMENT OF ENVIRONMENTAL REGULATION

Nº 84334

RECEIPT FOR APPLICATION FEES AND MISCELLANEOUS REVENUE

Received from Aman Chemical Corp. Date 8-14-84  
Address 402 S. Kentucky Ave. Dollars \$ 500.00/00  
Applicant Name & Address V. V. Lewis, P.O. Box 790  
Source of Revenue Phosphoric Acid Refluorinating  
Revenue Code 001031 Application Number AC 29-091316  
0022639 By Morothy Pelham

APPLICATION TRACKING SYSTEM

08/15/84

APPL NO:091316

APPL RECVD:08/10/84 TYPE CODE:AC SUBCODE:99

LAST UPDATE:08/15/84

DER OFFICE RECVD:TPA DER OFFICE TRANSFER TO:\_\_\_ APPLICATION COMPLETE:\_\_\_/\_\_\_/\_\_\_

DER PROCESSOR:ESTLER

APPL STATUS:AC DATE:03/10/84 (ACTIVE/DENIED/WITHDRAWN/EXEMPT/ISSUED/GENERAL)

RELIEF:\_\_\_ (SSAC/EXEMPTIONS/VARIANCE)

(Y/N) N MANUAL TRACKING

DISTRICT:40 COUNTY:29

(Y/N) N DNR REVIEW REQD?

LAT/LONG:\_\_\_/\_\_\_/\_\_\_

(Y/N) N PUBLIC NOTICE REQD?

BASIN-SEGMENT:\_\_\_

(Y/N) N GOV BODY LOCAL APPROVAL REQD?

COE #:\_\_\_

(Y/N) Y LETTER OF INTENT REQD? (I/ISSUE D/DENY)

ALT#:\_\_\_

PROJECT SOURCE NAME:PHOSPHORIC ACID DEFLUORINATING PLT.

STREET:CORONET ROAD

CITY:PLANT CITY

STATE:FL

ZIP:\_\_\_

PHONE:\_\_\_

APPLICATION NAME:AMAX PHOSPHATE, INC.

STREET:P C BOX 790

CITY:PLANT CITY

STATE:FL

ZIP:33506

PHONE:\_\_\_

AGENT NAME:LEWIS, J.J.

STREET:P C BOX 790

CITY:PLANT CITY

STATE:FL

ZIP:33566

PHONE:813-752-1161

FEE #1 DATE PAID:08/14/84

AMOUNT PAID:0500

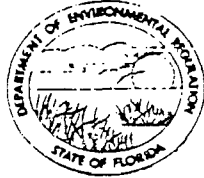
RECEIPT NUMBER:00084334

|   |  |           |             |
|---|--|-----------|-------------|
| B | DATE APPLICANT INFORMED OF NEED FOR PUBLIC NOTICE    | - - -     | ___/___/___ |
| C | DATE DER SENT DNR APPLICATION/SENT DNR INTENT        | - - -     | ___/___/___ |
| D | DATE DER REQ. COMMENTS FROM GOV. BODY FOR LOCAL APP. | -         | ___/___/___ |
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| E | DATE #3 ADDITIONAL INFO REQ--REC FROM APPLICANT      | - - -     | ___/___/___ |
| E | DATE #4 ADDITIONAL INFO REQ--REC FROM APPLICANT      | - - -     | ___/___/___ |
| E | DATE #5 ADDITIONAL INFO REQ--REC FROM APPLICANT      | - - -     | ___/___/___ |
| E | DATE #6 ADDITIONAL INFO REQ--REC FROM APPLICANT      | - - -     | ___/___/___ |
| F | DATE GOVERNING BODY REQUESTED SURVEY RESULTS/REPORTS | - -       | ___/___/___ |
| G | DATE FIELD REPORT WAS REQ--REC                       | - - - - - | ___/___/___ |
| H | DATE DNR REVIEW WAS COMPLETED                        | - - - - - | ___/___/___ |
| I | DATE APPLICATION WAS COMPLETE                        | - - - - - | ___/___/___ |
| J | DATE GOVERNING BODY PROVIDED COMMENTS OR OBJECTIONS  | - -       | ___/___/___ |
| K | DATE NOTICE OF INTENT WAS SENT--REC TO APPLICANT     | - - -     | ___/___/___ |
| L | DATE PUBLIC NOTICE WAS SENT TO APPLICANT             | - - - - - | ___/___/___ |
| M | DATE PROOF OF PUBLICATION OF PUBLIC NOTICE RECEIVED  | - -       | ___/___/___ |
| N | DATE WAIVER DATE BEGIN--END (DAY 90)                 | - - - - - | ___/___/___ |

COMMENTS:



AC 29-091316  
PAID AUG 14 1984



D. E. R.

STATE OF FLORIDA  
DEPARTMENT OF ENVIRONMENTAL REGULATION  
APPLICATION TO OPERATE/CONSTRUCT  
AIR POLLUTION SOURCES

AUG 10 1984

SOUTH WEST DISTRICT  
TAMPA

SOURCE TYPE: Point Source Air Pollution  New<sup>1</sup> [ ] Existing<sup>1</sup>

APPLICATION TYPE: [ Construction [ ] Operation [ ] Modification

COMPANY NAME: Amax Phosphate, Inc. COUNTY: Hillsborough

Identify the specific emission point source(s) addressed in this application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peeking Unit No. 2, Gas Fired) Phosphoric Acid Defluorinating Plant with Upflow Counter Current Scrubber

SOURCE LOCATION: Street Coronet Road City Plant City

UTM: East 17-393.8 North 3096.3

Latitude      °      '      "N Longitude      °      '      "W

APPLICANT NAME AND TITLE: J. J. Lewis, Plant Manager

APPLICANT ADDRESS: P.O. Box 790, Plant City, Florida 33566

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative\* of Amax Phosphate, Inc.

I certify that the statements made in this application for a construction permit are true, correct and complete to the best of my knowledge and belief. Further, I agree to maintain and operate the pollution control source and pollution control facilities in such a manner as to comply with the provision of Chapter 403, Florida Statutes, and all the rules and regulations of the department and revisions thereof. I also understand that a permit, if granted by the department, will be non-transferable and I will promptly notify the department upon sale or legal transfer of the permitted establishment.

\*Attach letter of authorization

Signed: [Signature]  
J. J. Lewis, Plant Manager  
Name and Title (Please Type)

Date: 6/4/84 Telephone No. (813) 752-1161

B. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA (where required by Chapter 471, F.S.)

This is to certify that the engineering features of this pollution control project have been designed/examined by me and found to be in conformity with modern engineering principles applicable to the treatment and disposal of pollutants characterized in the permit application. There is reasonable assurance, in my professional judgment, that the pollution control facilities, when properly maintained and operated, will discharge an effluent that complies with all applicable statutes of the State of Florida and the rules and regulations of the department. It is also agreed that the undersigned will furnish, if authorized by the owner, the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.

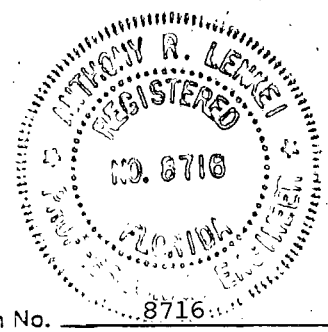
Signed: [Signature]  
Anthony R. Lenkei  
Name (Please Type)

Amax Phosphate, Inc.  
Company Name (Please Type)

P.O. Box 790, Plant City, FL 33566  
Mailing Address (Please Type)

Date:          Telephone No. (813) 752-1161

(Affix Seal)



Florida Registration No. 8716

<sup>1</sup> See Section 17-2.02(15) and (22), Florida Administrative Code, (F.A.C.)

SECTION II: GENERAL PROJECT INFORMATION

A. Describe the nature and extent of the project. Refer to pollution control equipment, and expected improvements in source performance as a result of installation. State whether the project will result in full compliance. Attach additional sheet if necessary.

This project will control emissions from the reaction tanks during the defluorination of phosphoric acid. The emission control system will consist of up-flow counter current wet scrubber, fan, and necessary duct work to vent the reaction tanks.

B. Schedule of project covered in this application (Construction Permit Application Only)

Start of Construction September 1, 1984 Completion of Construction February 28, 1985

C. Costs of pollution control system(s): (Note: Show breakdown of estimated costs only for individual components/units of the project serving pollution control purposes. Information on actual costs shall be furnished with the application for operation permit.)

Equipment and Materials - \$43,700  
Labor - \$15,300

D. Indicate any previous DER permits, orders and notices associated with the emission point, including permit issuance and expiration dates.

Not Applicable

E. Is this application associated with or part of a Development of Regional Impact (DRI) pursuant to Chapter 380, Florida Statutes, and Chapter 22F-2, Florida Administrative Code? Yes  No

F. Normal equipment operating time: hrs/day 8 ; days/wk 5 ; wks/yr 52 ; if power plant, hrs/yr N/A ; if seasonal, describe: \_\_\_\_\_

G. If this is a new source or major modification, answer the following questions. (Yes or No)

- |   |            |
|---|------------|
| 1. Is this source in a non-attainment area for a particular pollutant?  | <u>Yes</u> |
| a. If yes, has "offset" been applied?   | <u>N/A</u> |
| b. If yes, has "Lowest Achievable Emission Rate" been applied?  | <u>N/A</u> |
| c. If yes, list non-attainment pollutants.  |            |
| <u>Ozone, VOC</u>   |            |
| 2. Does best available control technology (BACT) apply to this source? If yes, see Section VI.  | <u>No</u>  |
| 3. Does the State "Prevention of Significant Deterioration" (PSD) requirements apply to this source? If yes, see Sections VI and VII. | <u>No</u>  |
| 4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source?  | <u>No</u>  |
| 5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source?                                       | <u>No</u>  |

Attach all supportive information related to any answer of "Yes". Attach any justification for any answer of "No" that might be considered questionable.

**SECTION III: AIR POLLUTION SOURCES & CONTROL DEVICES (Other than Incinerators)**

**A. Raw Materials and Chemicals Used in your Process, if applicable:**

| Description        | Contaminants |       | Utilization Rate - lbs/hr | Relate to Flow Diagram |
|--------------------|--------------|-------|---------------------------|------------------------|
|                    | Type         | % Wt  |                           |                        |
| Phosphoric Acid    | Fluoride     | 0.85% | 50,792                    | See Attachment D-1&D-2 |
| Diatomaceous Earth | Particulate  | 100   | 231                       | See Attachment D-1&D-2 |
| Caustic            | N/A          | N/A   | 626                       | See Attachment D-1&D-2 |
|                    |              |       |                           |                        |
|                    |              |       |                           |                        |

**B. Process Rate, if applicable: (See Section V, Item 1)**

1. Total Process Input Rate (lbs/hr): 51,649
2. Product Weight (lbs/hr): 51,872

**C. Airborne Contaminants Emitted:**

| Name of Contaminant | Emission <sup>1</sup> |             | Allowed Emission <sup>2</sup> Rate per Ch. 17-2, F.A.C. | Allowable <sup>3</sup> Emission lbs/hr | Potential Emission <sup>4</sup> |       | Relate to Flow Diagram |
|---------------------|-----------------------|-------------|---|--|---------------------------------|-------|------------------------|
|                     | Maximum lbs/hr        | Actual T/yr |   |  | lbs/hr                          | T/yr  |                        |
| Particulate         | 0.50                  | 0.52        | 17-2.610 (2) (a)  | 0.50                                   | 25.0                            | 26.0  | See Attach. D-3        |
| Fluoride            | 0.98                  | 1.02        | 17-2.600 (3) (a)  | 0.18                                   | 49.23                           | 51.20 | See Attach. D-3        |
|                     |                       |             |   |  |                                 |       |                        |
|                     |                       |             |   |  |                                 |       |                        |
|                     |                       |             |   |  |                                 |       |                        |

**D. Control Devices: (See Section V, Item 4)**

| Name and Type (Model & Serial No.) | Contaminant | Efficiency | Range of Particles <sup>5</sup> Size Collected (in microns) | Basis for Efficiency (Sec. V, It <sup>5</sup> ) |
|------------------------------------|-------------|------------|---|---|
| Upflow Counter Current             | Particulate | 98+%*      | N/A   | N/A   |
| Wet Scrubber                       | Fluoride    | 98+%*      | N/A   | N/A   |
| designed by A. R. Lenkei           |             |            |   |   |
|                                    |             |            |   |   |
|                                    |             |            |   |   |
|                                    |             |            |   |   |

<sup>1</sup> See Section V, Item 2.

<sup>2</sup> Reference applicable emission standards and units (e.g., Section 17-2.05(6) Table II, E. (1), F.A.C. - 0.1 pounds per million BTU heat input)

<sup>3</sup> Calculated from operating rate and applicable standard

\*Base on theoretical wet scrubber performance.

<sup>4</sup> Emission, if source operated without control (See Section V, Item 3)

<sup>5</sup> If Applicable

E. Fuels

Not Applicable

| Type (Be Specific) | Consumption* |         | Maximum Heat Input (MMBTU/hr) |
|--------------------|--------------|---------|-------------------------------|
|                    | avg/hr       | max./hr |                               |
|                    |              |         |                               |
|                    |              |         |                               |
|                    |              |         |                               |
|                    |              |         |                               |

\*Units Natural Gas, MMCF/hr; Fuel Oils, barrels/hr; Coal, lbs/hr

Fuel Analysis:

Percent Sulfur: \_\_\_\_\_ Percent Ash: \_\_\_\_\_

Density: \_\_\_\_\_ lbs/gal Typical Percent Nitrogen: \_\_\_\_\_

Heat Capacity: \_\_\_\_\_ BTU/lb \_\_\_\_\_ BTU/gal

Other Fuel Contaminants (which may cause air pollution): \_\_\_\_\_

F. If applicable, indicate the percent of fuel used for space heating. Annual Average \_\_\_\_\_ Maximum \_\_\_\_\_

G. Indicate liquid or solid wastes generated and method of disposal.

The liquid and solid waste generated by this process is either, used in the manufacturing process at the feed preparation plant or returned to the closed circuit recycled process water system.

H. Emission Stack Geometry and Flow Characteristics (Provide data for each stack):

Stack Height: 32 ft. Stack Diameter: 24 ft.

Gas Flow Rate: 1,900 ACFM - Gas Exit Temperature: 80 °F.

Water Vapor Content: 3.0 % Velocity: 10.08 FPS

SECTION IV: INCINERATOR INFORMATION

Not Applicable

| Type of Waste      | Type O (Plastics) | Type I (Rubbish) | Type II (Refuse) | Type III (Garbage) | Type IV (Pathological) | Type V (Liq & Gas By-prod.) | Type VI (Solid By-prod.) |
|--------------------|-------------------|------------------|------------------|--------------------|------------------------|-----------------------------|--------------------------|
| Lbs/hr Incinerated |                   |                  |                  |                    |                        |                             |                          |

Description of Waste \_\_\_\_\_

Total Weight Incinerated (lbs/hr) \_\_\_\_\_ Design Capacity (lbs/hr) \_\_\_\_\_

Approximate Number of Hours of Operation per day \_\_\_\_\_ days/week \_\_\_\_\_

Manufacturer \_\_\_\_\_

Date Constructed \_\_\_\_\_ Model No. \_\_\_\_\_

|                   | Volume<br>(ft) <sup>3</sup> | Heat Release<br>(BTU/hr) | Fuel |        | Temperature<br>(°F) |
|-------------------|-----------------------------|--------------------------|------|--------|---------------------|
|                   |                             |                          | Type | BTU/hr |                     |
| Primary Chamber   |                             |                          |      |        |                     |
| Secondary Chamber |                             |                          |      |        |                     |

Stack Height: \_\_\_\_\_ ft. Stack Diameter \_\_\_\_\_ Stack Temp. \_\_\_\_\_

Gas Flow Rate: \_\_\_\_\_ ACFM \_\_\_\_\_ DSCFM\* Velocity \_\_\_\_\_ FPS

\*If 50 or more tons per day design capacity, submit the emissions rate in grains per standard cubic foot dry gas corrected to 50% excess air.

Type of pollution control device:  Cyclone  Wet Scrubber  Afterburner  Other (specify) \_\_\_\_\_

Brief description of operating characteristics of control devices: Not Applicable

Ultimate disposal of any effluent other than that emitted from the stack (scrubber water, ash, etc.):

### SECTION V: SUPPLEMENTAL REQUIREMENTS

Please provide the following supplements where required for this application.

1. Total process input rate and product weight – show derivation. See Attachment A
2. To a construction application, attach basis of emission estimate (e.g., design calculations, design drawings, pertinent manufacturer's test data, etc.) and attach proposed methods (e.g., FR Part 60 Methods 1, 2, 3, 4, 5) to show proof of compliance with applicable standards. To an operation application, attach test results or methods used to show proof of compliance. Information provided when applying for an operation permit from a construction permit shall be indicative of the time at which the test was made. See Attachment B-1 and B-2
3. Attach basis of potential discharge (e.g., emission factor, that is, AP42 test). See Attachment B-1 and B-2
4. With construction permit application, include design details for all air pollution control systems (e.g., for baghouse include cloth to air ratio; for scrubber include cross-section sketch, etc.). See Attachment C
5. With construction permit application, attach derivation of control device(s) efficiency. Include test or design data. Items 2, 3, and 5 should be consistent: actual emissions = potential (1-efficiency). See Attachment B-1 and B-2
6. An 8½" x 11" flow diagram which will, without revealing trade secrets, identify the individual operations and/or processes. Indicate where raw materials enter, where solid and liquid waste exit, where gaseous emissions and/or airborne particles are evolved and where finished products are obtained. See Attachment D-1, D-2 and D-3
7. An 8½" x 11" plot plan showing the location of the establishment, and points of airborne emissions, in relation to the surrounding area, residences and other permanent structures and roadways (Example: Copy of relevant portion of USGS topographic map). See Attachment E
8. An 8½" x 11" plot plan of facility showing the location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram. See Attachment E

- 9. An application fee of \$20, unless exempted by Section 17-4.05(3), F.A.C. The check should be made payable to the Department of Environmental Regulation.
- 10. With an application for operation permit, attach a Certificate of Completion of Construction indicating that the source was constructed as shown in the construction permit.

**SECTION VI: BEST AVAILABLE CONTROL TECHNOLOGY**

A. Are standards of performance for new stationary sources pursuant to 40 C.F.R. Part 60 applicable to the source?  
 Yes  No

| Contaminant | Rate or Concentration |
|-------------|-----------------------|
|             |                       |
|             |                       |
|             |                       |
|             |                       |

B. Has EPA declared the best available control technology for this class of sources (if yes, attach copy)  Yes  No

| Contaminant | Rate or Concentration |
|-------------|-----------------------|
|             |                       |
|             |                       |
|             |                       |
|             |                       |

C. What emission levels do you propose as best available control technology?

| Contaminant | Rate or Concentration |
|-------------|-----------------------|
|             |                       |
|             |                       |
|             |                       |
|             |                       |

D. Describe the existing control and treatment technology (if any).

- |                           |                      |
|---------------------------|----------------------|
| 1. Control Device/System: | 4. Capital Costs:    |
| 2. Operating Principles:  | 6. Operating Costs:  |
| 3. Efficiency: *          | 8. Maintenance Cost: |
| 5. Useful Life:           |                      |
| 7. Energy:                |                      |
| 9. Emissions:             |                      |

| Contaminant | Rate or Concentration |
|-------------|-----------------------|
|             |                       |
|             |                       |
|             |                       |
|             |                       |

\*Explain method of determining D 3 above.

10. Stack Parameters

- a. Height: \_\_\_\_\_ ft.      b. Diameter: \_\_\_\_\_ ft.
- c. Flow Rate: \_\_\_\_\_ ACFM      d. Temperature: \_\_\_\_\_ °F
- e. Velocity: \_\_\_\_\_ FPS

E. Describe the control and treatment technology available (As many types as applicable, use additional pages if necessary).

1.

- a. Control Device: \_\_\_\_\_
- b. Operating Principles: \_\_\_\_\_
  
- c. Efficiency\*:
- d. Capital Cost:
- e. Useful Life:
- f. Operating Cost:
- g. Energy\*:
- h. Maintenance Cost:
- i. Availability of construction materials and process chemicals: \_\_\_\_\_
- j. Applicability to manufacturing processes: \_\_\_\_\_
- k. Ability to construct with control device, install in available space, and operate within proposed levels: \_\_\_\_\_

2.

- a. Control Device: \_\_\_\_\_
- b. Operating Principles: \_\_\_\_\_
  
- c. Efficiency\*:
- d. Capital Cost:
- e. Useful Life:
- f. Operating Cost:
- g. Energy\*\*:
- h. Maintenance Costs:
- i. Availability of construction materials and process chemicals: \_\_\_\_\_
- j. Applicability to manufacturing processes: \_\_\_\_\_
- k. Ability to construct with control device, install in available space, and operate within proposed levels: \_\_\_\_\_

\*Explain method of determining efficiency.

\*\*Energy to be reported in units of electrical power — KWH design rate.

3.

- a. Control Device: \_\_\_\_\_
- b. Operating Principles: \_\_\_\_\_
  
- c. Efficiency\*:
- d. Capital Cost:
- e. Life:
- f. Operating Cost:
- g. Energy:
- h. Maintenance Cost:

\*Explain method of determining efficiency above.

- i. Availability of construction materials and process chemicals:
- j. Applicability to manufacturing processes:
- k. Ability to construct with control device, install in available space and operate within proposed levels:

4.

- a. Control Device
- b. Operating Principles:
- c. Efficiency\*:
- d. Capital Cost:
- e. Life:
- f. Operating Cost:
- g. Energy:
- h. Maintenance Cost:
- i. Availability of construction materials and process chemicals:
- j. Applicability to manufacturing processes:
- k. Ability to construct with control device, install in available space, and operate within proposed levels:

F. Describe the control technology selected:

- 1. Control Device:
- 2. Efficiency\*:
- 3. Capital Cost:
- 4. Life:
- 5. Operating Cost:
- 6. Energy:
- 7. Maintenance Cost:
- 8. Manufacturer:
- 9. Other locations where employed on similar processes:

- a.
  - (1) Company:
  - (2) Mailing Address:
  - (3) City:
  - (4) State:
  - (5) Environmental Manager:
  - (6) Telephone No.:

\*Explain method of determining efficiency above.

- (7) Emissions\*:

| Contaminant | Rate or Concentration |
|-------------|-----------------------|
|             |                       |
|             |                       |
|             |                       |

- (8) Process Rate\*:

- b.
  - (1) Company:
  - (2) Mailing Address:
  - (3) City:
  - (4) State:

\*Applicant must provide this information when available. Should this information not be available, applicant must state the reason(s) why.



(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions\*:

| Contaminant | Rate or Concentration |
|-------------|-----------------------|
| <hr/>       | <hr/>                 |
| <hr/>       | <hr/>                 |
| <hr/>       | <hr/>                 |

(8) Process Rate\*:

10. Reason for selection and description of systems:

\*Applicant must provide this information when available. Should this information not be available, applicant must state the reason(s) why.

SECTION VII – PREVENTION OF SIGNIFICANT DETERIORATION

A. Company Monitored Data Not Applicable

1. \_\_\_\_\_ no sites \_\_\_\_\_ TSP \_\_\_\_\_ ( ) SO<sub>2</sub>\* \_\_\_\_\_ Wind spd/dir  
 Period of monitoring \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_ to \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
 month day year month day year

Other data recorded \_\_\_\_\_

Attach all data or statistical summaries to this application.

2. Instrumentation, Field and Laboratory.

a) Was instrumentation EPA referenced or its equivalent? \_\_\_\_\_ Yes \_\_\_\_\_ No

b) Was instrumentation calibrated in accordance with Department procedures? \_\_\_\_\_ Yes \_\_\_\_\_ No \_\_\_\_\_ Unknown

B. Meteorological Data Used for Air Quality Modeling

1. \_\_\_\_\_ Year(s) of data from \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_ to \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
 month day year month day year

2. Surface data obtained from (location) \_\_\_\_\_

3. Upper air (mixing height) data obtained from (location) \_\_\_\_\_

4. Stability wind rose (STAR) data obtained from (location) \_\_\_\_\_

C. Computer Models Used:

1. \_\_\_\_\_ Modified? If yes, attach description.

2. \_\_\_\_\_ Modified? If yes, attach description.

3. \_\_\_\_\_ Modified? If yes, attach description.

4. \_\_\_\_\_ Modified? If yes, attach description.

Attach copies of all final model runs showing input data, receptor locations, and principle output tables.

D. Applicants Maximum Allowable Emission Data

| Pollutant       | Emission Rate:  |
|-----------------|-----------------|
| TSP             | _____ grams/sec |
| SO <sub>2</sub> | _____ grams/sec |

E. Emission Data Used in Modeling

Attach list of emission sources. Emission data required is source name, description on point source (on NEDS point number), UTM coordinates, stack data, allowable emissions, and normal operating time.

F. Attach all other information supportive to the PSD review.

\*Specify bubbler (B) or continuous (C).

G. Discuss the social and economic impact of the selected technology versus other applicable technologies (i.e., jobs, payroll, production, taxes, energy, etc.). Include assessment of the environmental impact of the sources.

H. Attach scientific, engineering, and technical material, reports, publications, journals, and other competent relevant information describing the theory and application of the requested best available control technology.

ATTACHMENT A

Total Process Input Rate

50,792 Lbs./Hr. Phosphoric Acid @ 52%  $P_2O_5$  + 231 Lbs./Hr. Diatomaceous Earth + 626 Lbs./Hr. Sodium Hydroxide @ 50% NaOH = 51,649 Lbs./Hr.  
Total Process Input Rate.

Product Rate

51,649 Lbs./Hr. Total Process Input Rate + 1490 Lbs./Hr.  $H_2O$  as steam - (1357 Lbs./Hr. Sludge) composed of (1.0% Phosphoric Acid Input + 99.0% Diatomaceous Earth Input + 99.0% Sodium Hydroxide Input) = 51,782 Lbs./Hr. Product.

ATTACHMENT B-1

Particulate Emissions (Actual)

Estimated Scrubber System Loading: 25 Lbs./Hour

100% - 98% (Scrubber Efficiency) = 2%

25 Lbs./Hour Loading to Scrubber System X 2% Discharge = 0.50 Lbs./Hour  
Emissions

0.50 Lbs./Hour Emissions X 2080 Hours Annual Operating Time = 1040  
Lbs./Year Emissions ÷ 2,000 Lbs./Ton = 0.52 Tons/Year Emissions

Potential Emissions

25 Lbs./Hour Scrubber System Loading

25 Lbs./Hour X 2080 Hours Annual Operating Time = 52,000 Lbs./Year  
÷ 2,000 Lbs./Ton = 26 Tons/Year Potential Emissions

Particulate compliance will be demonstrated using Method 5.

ATTACHMENT B-2

Fluoride Emissions (Actual)

Estimated Scrubber Loading: 49.23 Lbs./Hour

100% - 98% (Scrubber System Efficiency) = 2.0%

49.23 Lbs./Hour Loading to Scrubber System X 2.0% Discharge =  
0.98 Lbs./Hour Emissions

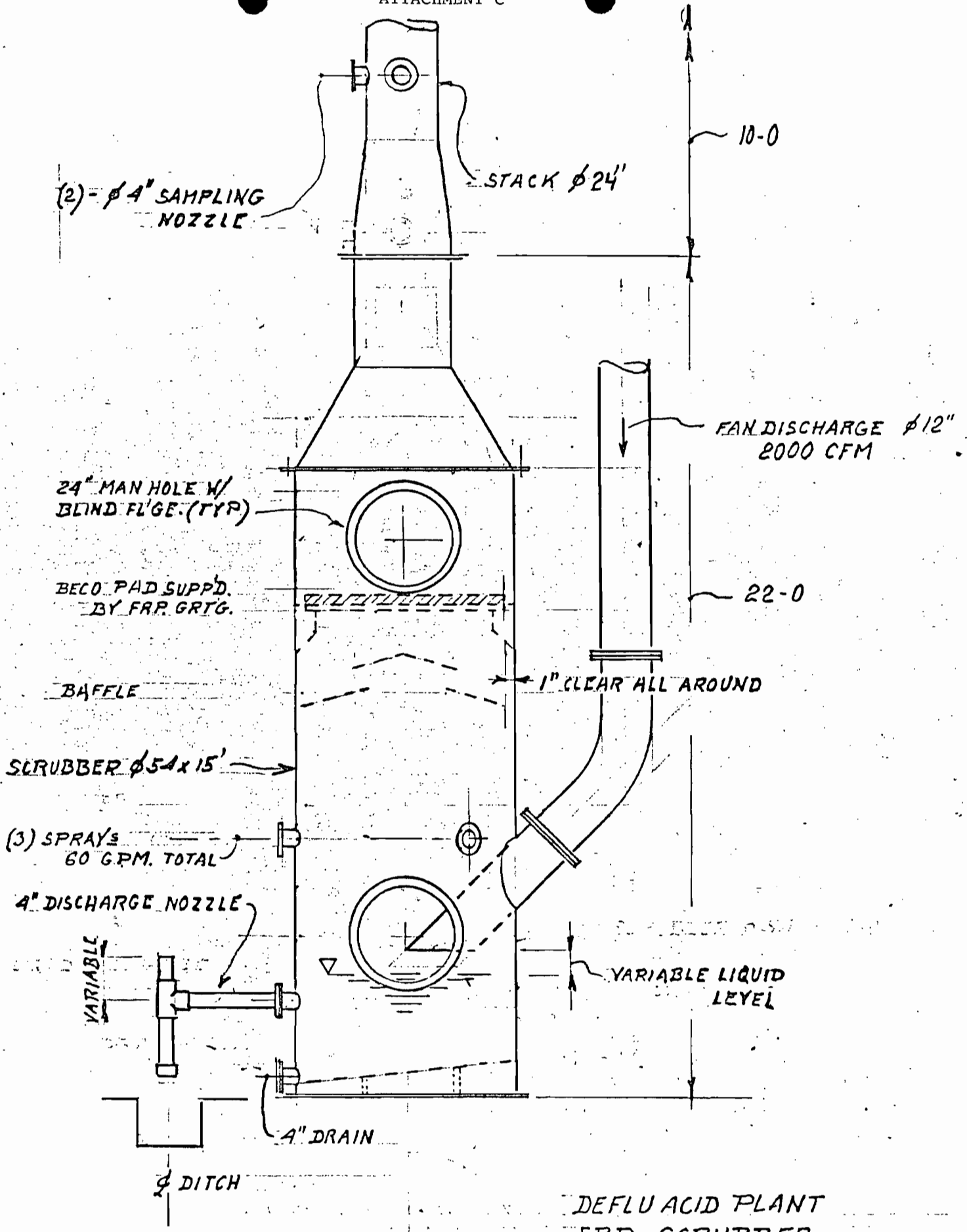
0.98 Lbs./Hour Emissions X 2080 Hours Annual Operating Time =  
2038.4 Lbs./Year Emissions ÷ 2,000 Lbs./Ton = 1.02 Tons/Year Emissions

Potential Emissions

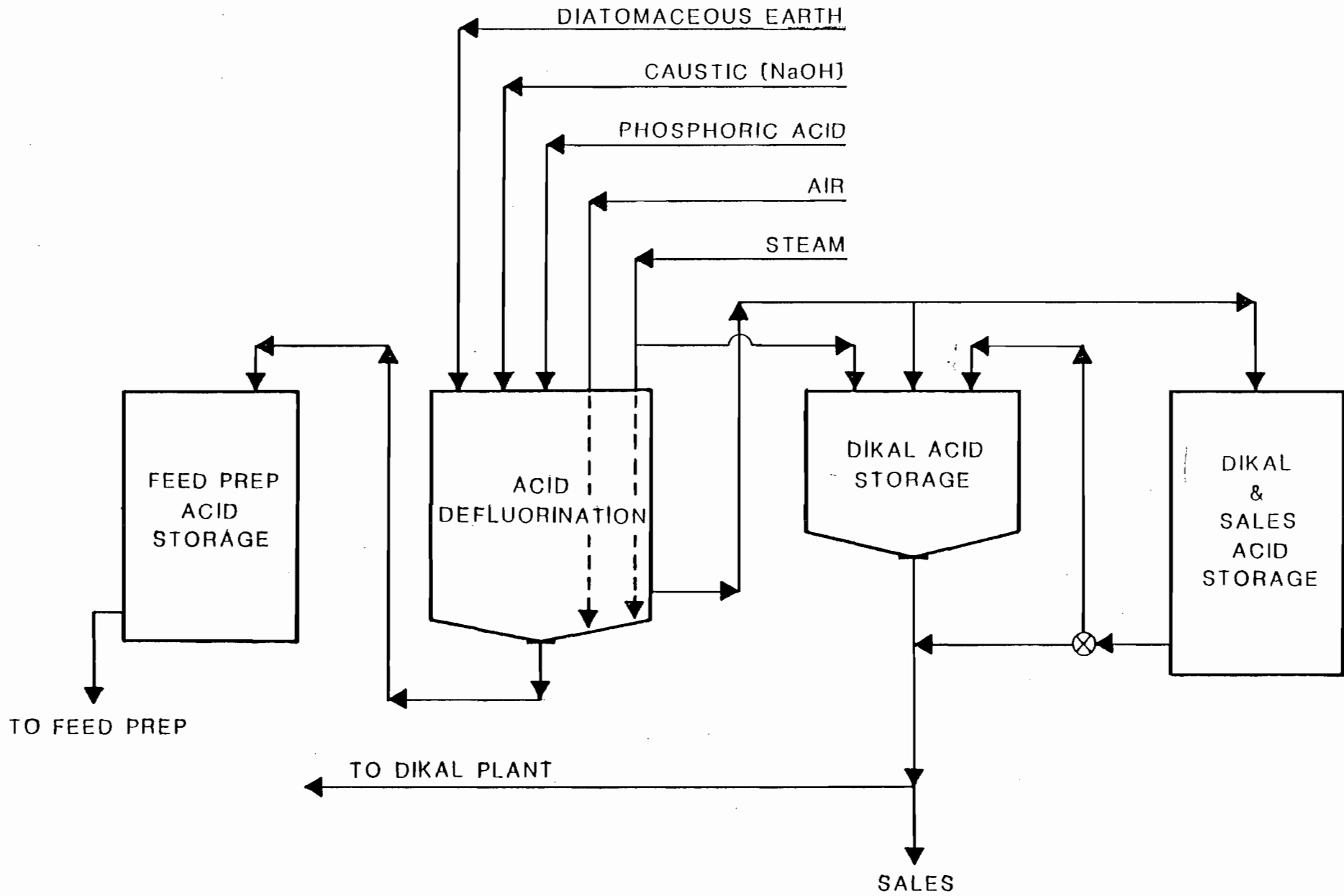
49.23 /Hour Scrubber System Loading

49.23 Lbs./Hour X 2080 Hours Annual Operating Time = 102,398 Lbs./Year  
÷ 2,000 Lbs./Ton = 51.20 Tons/Year Emissions

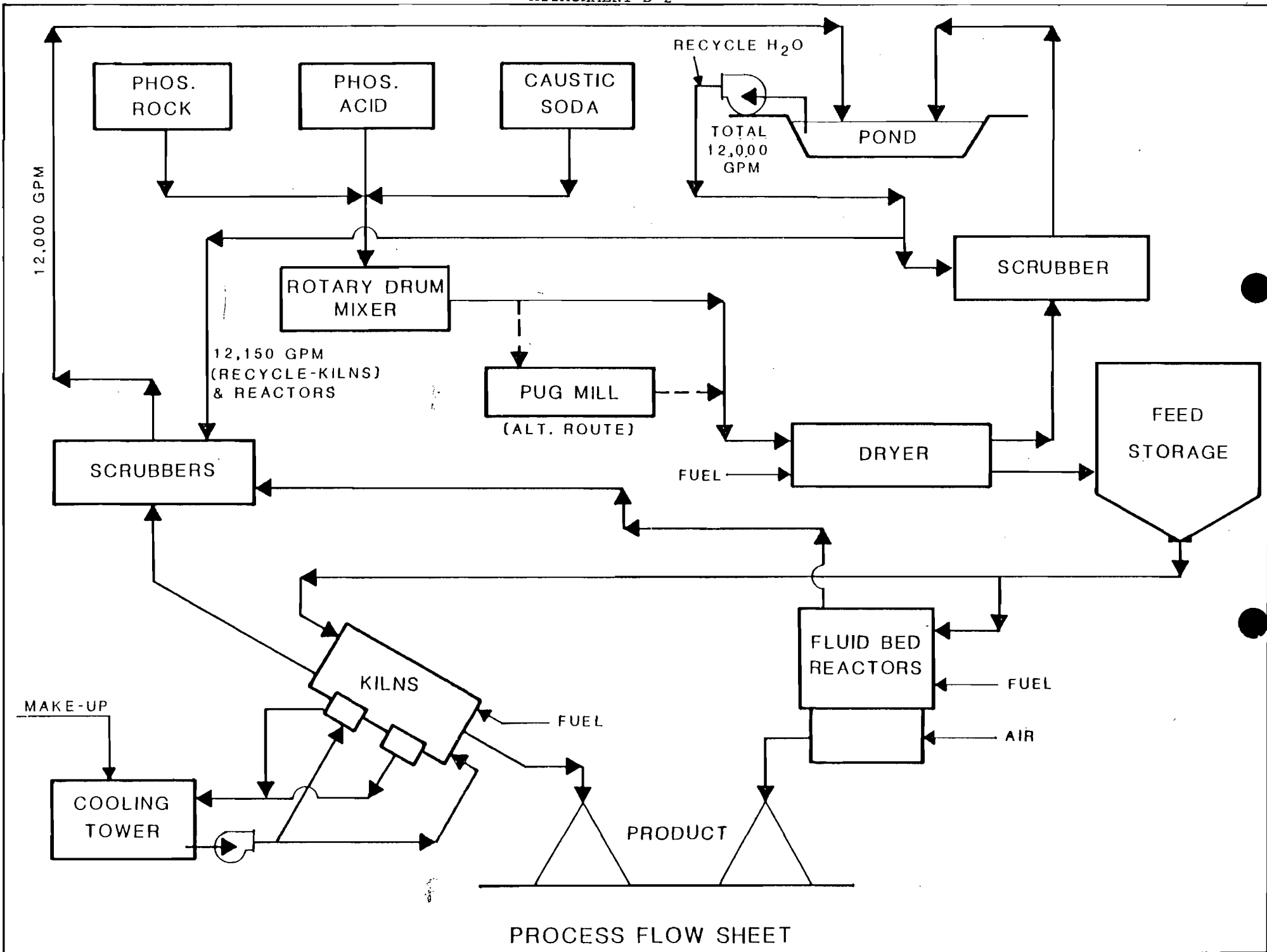
Fluoride compliance will be demonstrated using Method 13B.



DEFLU ACID PLANT  
FRP SCRUBBER



DEFLUORINATED PHOSPHORIC ACID FLOW SHEET





AMAX PLANT CITY OPERATION

FLOW DIAGRAM

ATTACHMENT D-3

