

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
NOTICE OF FINAL AMENDED PERMIT

In the Matter of an
Application for Permit


Mr. Steven J. Susick, General Manager
US Agri-Chemicals, Inc.
3225 State Road 630 West
Fort Meade, Florida 33841-9799

DEP File No. AC53-260190
PSD-FL-222
Polk County

Enclosed is the FINAL Amended Permit AC53-260190 (PSD-FL-222) to construct a 40.9 TPH prilled monoammonium phosphate plant at the US Agri-Chemicals facility located at 3225 State Road 630 West, Fort Meade, Polk County, Florida 33841. The final amended permit incorporates the Final Best Available Control Technology Determination (BACT) and revisions of permit conditions as a result of events that occurred after the original permit was issued. This permit is issued pursuant to Section 403, F.S.

Any party to this order (permit) has the right to seek judicial review of the permit pursuant to Section 120.68, F.S., by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the Department in the Legal Office; and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within 14 (fourteen) days from the date this Notice is filed with the Clerk of the Department.

Executed in Tallahassee, Florida.


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

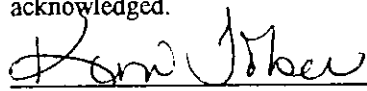
CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this NOTICE OF FINAL PERMIT (including the FINAL permit) was sent by certified mail (*) and copies were mailed by U.S. Mail before the close of business on 10-16-98 to the person(s) listed:

Mr. Steven J. Susick *
Mr. Brian Beals, EPA
Mr. John Bunyak, NPS
Mr. Joe King, Polk County
Mr. John Koogler, K&A
Mr. Bill Thomas, SWD

Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to §120.52(7), Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.


(Clerk) 10-16-98
(Date)

Final Determination
US Agri-Chemicals Corp.
Fort Meade, Florida

Prilled Monoammonium Phosphate (MAP) Plant
PSD-FL-222 (AC53-260190)

The Intent to Issue Amended Air Construction Permit for a 60 tons per hour prilled monoammonium phosphate (MAP) plant at US Agri-Chemicals, Inc., 3225 State Road 630 West, Fort Meade, Florida 33841-9799, Polk County, Florida, was distributed on December 23, 1996. The Public Notice of Intent to Issue was published in the Ledger on February 24, 1997. Copies of the Intent to Issue were available for public inspection at the Department's offices in Tallahassee and Tampa.

Prior to and following the publication of the public notice, the Department and the applicant pursued ways to resolve the Department's and the applicant's respective concerns about the change from a control technology-based BACT determination to an emission limit BACT. This occurred because the applicant did not install the control technology specified in the original permit. Subsequently, the applicant filed a petition for an administrative hearing. The issues were finally resolved with the parties agreeing that the production rate for the construction permit will be limited to 110% of the rate at which the plant was tested, i.e., 40.9 tons of product per hour at the same emission limits as were proposed in the Intent to Issue Amended Air Construction Permit.

If the applicant desires to operate the prilled MAP plant above 40.9 tons of product per hour, an application for a permit to modify this construction permit must be submitted followed by proper publication of the notice of the Department's Intent to Issue Amended Air Construction Permit at the higher production rate. Also, a performance test must be conducted at the higher production rate, after providing proper notice to the Department, to demonstrate compliance with the emission limits. The applicant has agreed to install additional control equipment as required if the emission limits are not met at a higher production rate.

The Department does not accept the applicant's claim that, for fluoride removal, a venturi scrubber is equivalent to a packed scrubber. Because the source is no longer a significant emitter of fluorides with respect to PSD, the BACT determination for fluorides is not pursuant to the requirements of Rule 62-212.400, F.A.C. Instead it is pursuant to 62-296.403(1)(i). It will not be used as a precedent for future BACT determinations.

Additional comments received from the applicant dated May 7, 1998, have been incorporated into the permit as appropriate. The Department's final action will be to issue the Amended Construction Permit as indicated in this Final Determination.

Z 333 612 482

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PS Form 3800, April 1995

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P50-F1-222	

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Steven J. Susick
US Agri Chemicals
3225 State Rd - 630 West
Ft. Meade, FL 33841-9799

4a. Article Number
Z 333 612 482

4b. Service Type

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Department of Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

PERMITTEE:
US Agri-Chemicals Corp.
3225 State Road 630 West
Fort Meade, FL 33841-9799

Permit Number: AC 53-260190
PSD-FL-222
Expiration Date: Dec. 30, 1998
County: Polk
Latitude/Longitude: 27°44'25"N
81°51'05"W
Project: 40.9 TPH Prilled MAP
Plant

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

For the construction of a 40.9 TPH Prilled MAP Plant. The facility is located at 3225 State Road 630 West, Fort Meade, Polk County, Florida. The UTM coordinates are Zone 17: 416 km East and 3,069 km North.

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

Attachments are listed below:

1. DEP's letter dated November 23, 1994
2. USDOJ's letter dated December 15, 1994
2. DEP's letter dated February 17, 1995
3. K&A's letter dated March 2, 1995
4. K&A's letter dated March 20, 1995
5. K&A's letter dated March 29, 1995
6. K&A's letter dated March 31, 1995
7. USAC's letter dated July 13, 1995
8. USEPA's letter dated August 7, 1995
9. K&A's letter dated August 14, 1995
10. K&A's letter dated September 12, 1995
11. K&A's letter dated June 4, 1996
12. DEP's letter dated July 3, 1996
13. K&A's letter dated October 1, 1996
14. K&A's letter dated February 7, 1997

PERMITTEE:
US Agri-Chemicals Corp.

Permit Number: AC 53-260190
PSD-FL-222
Expiration Date: Dec. 30, 1998

GENERAL CONDITIONS:

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

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

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

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

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

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

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

PERMITTEE:
US Agri-Chemicals Corp.

Permit Number: AC 53-260190
PSD-FL-222
Expiration Date: Dec. 30, 1998

GENERAL CONDITIONS:

credentials or other documents as may be required by law and at a reasonable time, access to the premises, where the permitted activity is located or conducted to:

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

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

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

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

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

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

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

PERMITTEE:
US Agri-Chemicals Corp.

Permit Number: AC 53-260190
PSD-FL-222
Expiration Date: Dec. 30, 1998

GENERAL CONDITIONS:

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

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

13. This permit also constitutes:

- (X) Determination of Best Available Control Technology (BACT) - attached and made a part of this permit.
- (X) Determination of Prevention of Significant Deterioration (PSD)
- () Compliance with New Source Performance Standards (NSPS)

14. The permittee shall comply with the following:

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

PERMITTEE:
US Agri-Chemicals Corp.

Permit Number: AC 53-260190
PSD-FL-222
Expiration Date: Dec. 30, 1998

GENERAL CONDITIONS:

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

SPECIFIC CONDITIONS:

1. Unless otherwise indicated, the construction and operation of the subject Prilled MAP production facility shall be in accordance with the capacities and specifications stated in the application. [Rule 62-210.300, F.A.C.]
2. The production rate of the Prilled MAP plant shall not exceed 40.9 tons MAP product per hour, except as allowed by Specific Condition No. 7 below. [Rule 62-210.200, F.A.C.]
3. The Prilled MAP plant may operate up to 8760 hours per year. [Rule 62-210.200, F.A.C.]
4. Visible emissions from the Prilled MAP plant loadout baghouse shall not exceed 5% opacity. [Rules 62-296.320 and 62-212.400, F.A.C.]
5. The following emission limits shall apply to the scrubber stack: PM/PM10: 0.4 lb/ton MAP, 16.4 lb/hr and 71.7 tons/yr (based on 40.9 tons/hr MAP); Total Fluorides: 0.019 lb/ton P2O5 input, 0.39 lb/hr and 1.7 tons/yr (based on 20.5 tons/hr P2O5). Visible Emissions: 15% opacity. [Rules 62-296.403 and 62-212.400, F.A.C.]
6. Annual compliance tests for total fluorides, PM/PM10 and visible emissions shall be conducted on the scrubber stack. The product loadout baghouse shall be tested annually for visible emissions only. For the duration of all tests the emission unit shall be operating at permitted capacity. Permitted capacity is defined as 90-100 percent of the maximum operating rate allowed by the permit. If it is impracticable to test at permitted capacity, then the emission unit may be tested at less than capacity (i.e., less than 90 percent of maximum operating rate allowed by the permit); in this case, subsequent emission unit operation is limited to 110 percent of the test load until a new test is conducted. Once the emission unit is so limited, then operation at higher capacities is allowed for no more than 15 consecutive days for the purposes of additional compliance testing to regain the permitted capacity in the permit. [Rule 62-297.310, F.A.C.]

PERMITTEE:
US Agri-Chemicals Corp.

Permit Number: AC 53-260190
PSD-FL-222
Expiration Date: Dec. 30, 1998

SPECIFIC CONDITIONS:

7. In order to regain the originally intended plant capacity of 60 tons MAP product per hour, the permittee may conduct a performance test at a rate higher than 40.9 tons MAP product per hour and up to 60 tons MAP product per hour by notifying the Department at least 15 days in advance of the special test. The plant may be operated at the higher rate for only seven consecutive days and then must resume operation at no higher than 40.9 tons MAP product per hour. In the process of regaining the originally intended capacity of 60 tons MAP product per hour, the permittee shall not be required to undergo another PSD review and BACT determination for PM/PM10 under Rule 62-212.400, F.A.C. or another BACT review for fluorides under Rule 62-296.403, F.A.C., unless the permittee submits an application to increase the plant's maximum operating capacity above 60 tons MAP product per hour. [Rules 62-212.400, 62-296.403, 62-297.310, F.A.C. and agreement of April 2, 1998]

8. The Department's Bureau of Air Regulation Office in Tallahassee and the Southwest District office shall be notified in writing at least 15 days prior to any emission test. [Rule 62-297.310, F.A.C.]

9. The test procedures for fluorides shall be in accordance with EPA Reference Methods 1, 2, 3, and 13A or 13B, as published in 40 CFR 60, Appendix A. The test procedures for PM/PM10 and visible emissions shall be in accordance with EPA Reference Methods 1, 2, 3, 5 and 9, as appropriate, as published in 40 CFR 60, Appendix A. [Rules 62-204.800, F.A.C.]

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

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

12. The Prilled MAP plant shall be subject to the following:

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

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

PERMITTEE:
US Agri-Chemicals Corp.

Permit Number: AC 53-260190
PSD-FL-222
Expiration Date: Dec. 30, 1998

SPECIFIC CONDITIONS:

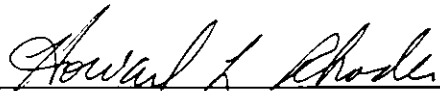
c. Considering operational variations in types of industrial equipment operations affected by this rule, the Department may adjust maximum and minimum factors to provide reasonable and practical regulatory controls consistent with the public interest. [Rule 62-210.700, F.A.C.]

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

13. The permittee shall submit an Annual Operating Report using DEP Form 62-210.900(4) to the Department's Southwest District office by March 1 of the following year for the previous year's operation. [Rule 62-210.370, F.A.C.]

14. The permittee, for good cause, may request that this construction permit be extended. Such a request shall be submitted to the Bureau of Air Regulation prior to 60 days before the expiration of the permit. [Rule 62-4.090, F.A.C.]

**STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION**



Howard L. Rhodes, Director
Division of Air Resources Management

FINAL REVISED
Best Available Control Technology (BACT) Determination
U.S. Agri-Chemicals Corporation
Fort Meade, Polk County, Florida
PSD-FL-222
AC53-260190

The applicant originally proposed to construct a 60 tons per hour (TPH) prilled monoammonium phosphate (MAP) plant at their phosphate processing facility in Fort Meade. The project as originally proposed will result in a significant increase in emissions of particulate matter (PM/PM₁₀) and fluoride (F). The project was, therefore, subjected to Prevention of Significant Deterioration (PSD) review in accordance with Rule 62-212.400, Florida Administrative Code (F.A.C.). The BACT determination is part of the review required by Rules 62-212.400 and 62-296.403(1)(i), F.A.C.

Date of Receipt of Complete Application: April 4, 1995

BACT Determination Proposed by Applicant:

<u>Emission Limits:</u>	Tower & Cooler	0.0417 lb F/ton P ₂ O ₅ input 0.40 lb PM/PM ₁₀ per ton MAP
	Product Loadout	0.072 lb PM/PM ₁₀ per ton MAP

Control Technology: Medium-energy venturi scrubber using recycled slurry (for tower and cooler)
Baghouse (for product loadout)

Revised BACT Determination Procedure:

In accordance with Rule 62-210.200 (Definitions), F.A.C., this revised BACT determination is based on the maximum degree of reduction of each pollutant emitted which the Department, on a case by case basis, taking into account energy, environmental and economic impacts, and other costs, determines is achievable through application of production processes and available methods, systems, and techniques. If the Department determines that technological or economic limitations on the application of measurement methodology to a particular part of the emission unit or facility would make the imposition of an emission standard infeasible, a design, equipment, work practice, operational standard or combination thereof, may be prescribed instead to satisfy the requirement for the application of BACT. Such standard shall, to the degree possible, set forth the emissions reductions achievable by implementation of such design, equipment, work practice or operation.

In addition, Rule 62-212.400(6)(a), F.A.C., states that in making the BACT determinations (for new or modified emission units subject to PSD) the Department shall give consideration to:

1. Any Environmental Protection Agency determination of Best Available Control Technology pursuant to Section 169, and any emission limitation contained in 40 CFR Part 60 (Standards of Performance for New Stationary Sources) or 40 CFR Part 61 (National Emission Standards for Hazardous Air Pollutants).
2. All scientific, engineering, and technical material and other information available to the Department.
3. The emission limiting standards or BACT determinations of any other state.
4. The social and economic impact of the application of such technology.

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

Original BACT Determined by DEP:

<u>Emission Limits:</u>	Tower and Cooler	Fluoride and PM/PM ₁₀ limits to be established after performance test
	Product Loadout	No visible emissions

Control Technology:

Options for Tower & Cooler:

Medium-energy venturi primary scrubber with packed secondary scrubber using recirculated gypsum/cooling pond water (minimum 99.3% removal of total gaseous fluorides and 99.0% removal by weight of PM/PM₁₀ over 5 microns)

Medium-to-high-energy venturi scrubber using neutralized water from dedicated scrubber pond with fresh water makeup (minimum 99.3% removal of total gaseous fluorides and 99.0% removal by weight of PM/PM₁₀ over 5 microns)

Other system with equivalent removal efficiencies approved by the Department

Product Loadout: Baghouse as proposed

Original BACT Determination Rationale:

The applicant based their proposed fluoride BACT emission limit of 0.0417 lb F per ton P₂O₅ on the Department's 1994 BACT determination for IMC-Agrico's granular Diammonium Phosphate plant in Polk County (PSD-FL-204). However, due to the substantial differences in air flow and other process variables that exist between the granulation and prill tower processes, the Department cannot rely on the granulation emissions to accurately predict emissions from the prill process.

PM/PM₁₀ emission limits were proposed by the applicant based on a 1980 BACT determination for a prilled MAP plant operated by IMC-Agrico. Since that is the only BACT determination available (15 years old) and technological advances have no doubt been made since 1980, the Department prefers not to rely on it for this new source. This leaves the Department without an adequate basis for arriving at BACT limits for this project prior to construction.

In such cases where relevant data are not available on which to base an enforceable BACT emission limit, the Department can prescribe a design or equipment to satisfy the requirement for the application of BACT and set forth the emissions reductions achievable by implementation of such design or equipment. Such design or equipment should be at least equivalent to those imposed in other BACT determinations for the same industry.

Based on a review of state-of-the-art fluoride scrubber capabilities in the phosphate industry, the Department determined that for this application, the control equipment should be capable of achieving at least 99.3% removal of gaseous fluorides and 99.0% (wt.) removal of PM/PM₁₀ above 5 microns. The previously described control equipment options were consistent with the system originally proposed by USAC in its application (but subsequently revised).

The prescribed removal efficiency for fluorides is known to be achievable by the technology if calculated on the basis of fluoride entering and leaving via the gas stream compared with the theoretical equilibrium concentration of fluorides between the gas stream and the scrubbing medium. The Department required the applicant to submit scrubber design calculations and drawings to the Department for approval prior to construction to show that the equipment will meet these removal efficiencies.

The Department issued an interim permit to USAC requiring that limits be established following completion of the compliance tests, as long as USAC followed the permit and BACT requirements. USAC accepted the permit and its conditions.

Equipment Installed by Applicant:

Instead of using a venturi scrubber in conjunction with a packed scrubber and pond water or using a venturi scrubber with neutralized water, the company selected a different design. USAC installed a venturi scrubber with high-solids recirculated scrubbing slurry (up to 15% P₂O₅) for product recovery reasons. This hot slurry (122 F.) causes a higher fluoride content in the gas and consequently higher fluoride emissions compared to a packed scrubber with pond water, or the venturi alone with neutralized water from a dedicated pond.

The applicant subsequently submitted engineering calculations claiming that the venturi with its high-solids scrubbing water will provide gaseous fluoride removal equivalent to that of a packed scrubber system using much cleaner water from the cooling pond.

The Department responded by showing that USAC's scrubber would achieve only about half of the 5.3 transfer units claimed. This analysis was based in part on a technical paper that showed about 3.5 mass transfer units (vs. USAC's 5.3) would be the most that could reasonably be expected for a venturi removing fluorides using neutralized pond water.¹

USAC's design engineers (the Jacobs Engineering Group in Lakeland, Florida) then sent a letter to USAC claiming 6.0 transfer units for their high-solids scrubbing water. This was based on their analysis of data in the above article. These data were obtained using neutralized, clean scrubbing water and not a slurry as the Jacobs design uses.

The Jacobs calculations are incorrect because of two improper assumptions. The extrapolated curve that Jacobs drew on Figure 5 of the article is not relevant for their unneutralized scrubbing water. Secondly, the data in Figure 5 cannot be infinitely extrapolated at constant L/G because the short contact time in the venturi throat prevents the mass transfer from increasing beyond a certain gas velocity.

Attached is an extrapolation performed on Figure 6 which shows the variation of transfer units with the same variables as in Figure 5 but with pressure drop added. As shown, a maximum of 4.0 transfer units is obtained for the conditions specified by Jacobs, again keeping in mind that this is applicable only for neutralized water. The highest actual test result reported was 3.6 NTU with neutralized water, therefore, the Department's 2.7 NTU estimate is reasonable for the high-solids scrubbing slurry Jacobs has proposed.

The limitations on gas/liquid mass transfer in a venturi scrubber result primarily from the short contact time. Because contact time is so short, there is a point beyond which mass transfer will not increase as additional transfer area is created by the smaller liquid drops formed with increased pressure drop. The Department, therefore, rejects the claim that the installed system is equivalent to the prescribed systems in terms of fluoride removal efficiency. This conclusion is buttressed by references in the technical literature and the opinions of at least two acknowledged phosphate industry control technology experts.^{2,3,4}

Tests from Constructed Plant:

Since the applicant installed a non-approved scrubber design (for enhancing product recovery rather than achieving maximum pollutant removal), the Department proposed a revised permit with a fluoride emission limit of 0.019 lb F/ton P₂O₅, believed to be achievable only by using a relatively clean scrubbing liquid. The revised permit required simultaneous sampling of the scrubber inlet. Tests were conducted by USAC at the plant on December 29, 1997. Fluoride emissions were reported to be 0.0076 lb/ton P₂O₅ while the plant was producing 37.2 tons per hour of MAP or approximately 62 percent of design capacity.⁵ Although the revised permit required simultaneous sampling of the inlet with the outlet to establish the efficiency of the control unit, USAC tested only the outlet, citing permit requirements and technical difficulties.

The emissions are substantially less than the limit of 0.0417 lb/ton P₂O₅ requested in the application. However, the tests were conducted well below capacity and during the coldest part of the year which is when fluoride emission potential will be at its minimum. It is noteworthy that according to the report, "low ambient temperature and high wind conditions" were also cited as reasons why it was impossible to maintain the test filter box in the specified temperature range required by the EPA Reference Method.

Revised BACT Determination:

<u>Emission Limits:</u>	Tower & Cooler:	0.019 lb F/ton P ₂ O ₅ input 0.40 lb PM/PM ₁₀ per ton MAP 15% opacity
	Product Loadout:	No visible emissions

Control Technology:

Options for Tower & Cooler if Fluoride Limits Not Met:

- Venturi primary scrubber using recirculated slurry followed by secondary scrubber using once-through cooling pond water.
- Venturi scrubber using recirculated neutralized water from dedicated scrubber pond to allow proper settling of solids.

Product Loadout: Baghouse as proposed

Revised BACT Determination Rationale:

The emission-based BACT limit was set on the basis of information received from IMC-Agrico after issuance of the original USAC permit. At the emission limits proposed by the Department and at the production rates during the tests conducted by USAC, the process will emit less than 3 tons per year of fluoride. Therefore the project is not subject to PSD Review for this pollutant and is subject to the BACT requirements of Rule 62-296.403(1)(i) and not the BACT requirements of Rule 62-212.400.

Conclusion:

The Department has reasonable assurance that the plant can comply under certain circumstances with the BACT fluoride limit. The main condition is operating under a reduced production rate. Therefore the permit will be re-issued with production limits effectively de-rating the plant. In the future, USAC may request to test at higher production rates and subsequently apply for a modification of the construction permit to increase production based on the results.

USAC will be required to submit test protocols to ensure that tests are conducted in such a manner that the Department will have reasonable assurance that they reasonably represent the highest fluoride evolution potential normally encountered under the design. Installation of one of the Department prescribed technologies would provide immediate assurance, in lieu of tests, that the plant can comply with the emission limits throughout the design production range.

BACT Analysis Details Available From:

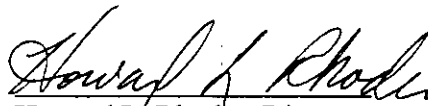
John Reynolds, Permit Engineer
A.A. Linero, PE Adminsitrator
New Source Review Section
Bureau of Air Regulation
Department of Environmental Protection
2600 Blair Stone Road (MS 5505)
Tallahassee, Florida 32399-2400

Recommended by:



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

Approved by:



Howard L. Rhodes, Director
Division of Air Resources Management

REFERENCES

- ¹ Djioloian, C., and Billaud, D., Rhone-Poulenc-Chemie Minerrale. "Absorbing Fluorine Compounds from Waste Gases." Chemical Engineering Progress, November, 1978.
- ² Pedersen, G.C., Kimre Inc. and Bhattacharjee, P.K., U.S. Agri-Chemical Corp. "Scrubbers with a Level Head." Chemical Engineering, November, 1997.
- ³ Letter dated March 3, 1998 from Kimre, G.C., Kimre, Inc. to Linero, A.A., Florida DEP. Scrubbers, specifically for the Phosphate Industry and for other Applications.
- ⁴ Letter dated October 4, 1996 from Teller, A.J., to Reynolds, J.M., Florida DEP. Regarding Fluoride Scrubbing using a Venturi.
- ⁵ Letter dated January 8, 1998 from Brunk, R.L., U.S. Agri-Chemical Corp., to Proses, W., Florida DEP. Regarding Test at MAP Prill Plant.

DR. AARON J. TELLER
47 ST. JAMES DRIVE
PALM BEACH GARDENS, FL 33418

4 Oct 1996

Mr. John Reynolds
Dept of Environmental Protection
Twin Towers Office Bldg
2600 Blair Stone Rd.
Tallahassee, FL 32399-2400

RECEIVED

OCT 11 1996

BUREAU OF
AIR REGULATION

Dr. Mr. Reynolds,

It was indicated that a claim for achievement of 5.3 Transfer units was made for a fluoride scrubbing process using a venturi.

It should be noted that the venturi is inherently a particulate collection device and is used only as a scrubber of last resort. The reason is that the mass transfer is limited because of minimal surface renewal. The deficiency can be overcome by decreasing the particle size of the spray and increasing the L/G , provided cost of operation is not restrictive.

Inasmuch as a venturi is generally followed by a cyclone separator, an additional transfer unit can be attained due to wetted wall action.

A comparison of performance of venturi-cyclone systems is attached (Table I). As noted, the rational range of operation will provide in the region of 3.5 transfer units. The 5 transfer unit range can be achieved if the client will accept an energy consumption of 370 HP/10000 CFM.

Sincerely
AJT

TABLE I
 VENTURI - CYCLONE SEPARATOR
 PERFORMANCE

SYSTEM	THREAT VEL, FPS	L/G GAL/1000CFM	AP in w.g.	HP - GAS + LIQ / 1000CFM	NTU Transfer UNITS
VENTURI - CYCLONE	140	12	16	45	2.2 - 2.6
VENTURI - CYCLONE	250	12	50	150	3.2 - 4.0
VENTURI - CYCLONE	400	12	130	370	4.2 - 5.2

Act. No. _____
 Compid. By _____
 Date _____
 OK'd. By _____
 Date _____

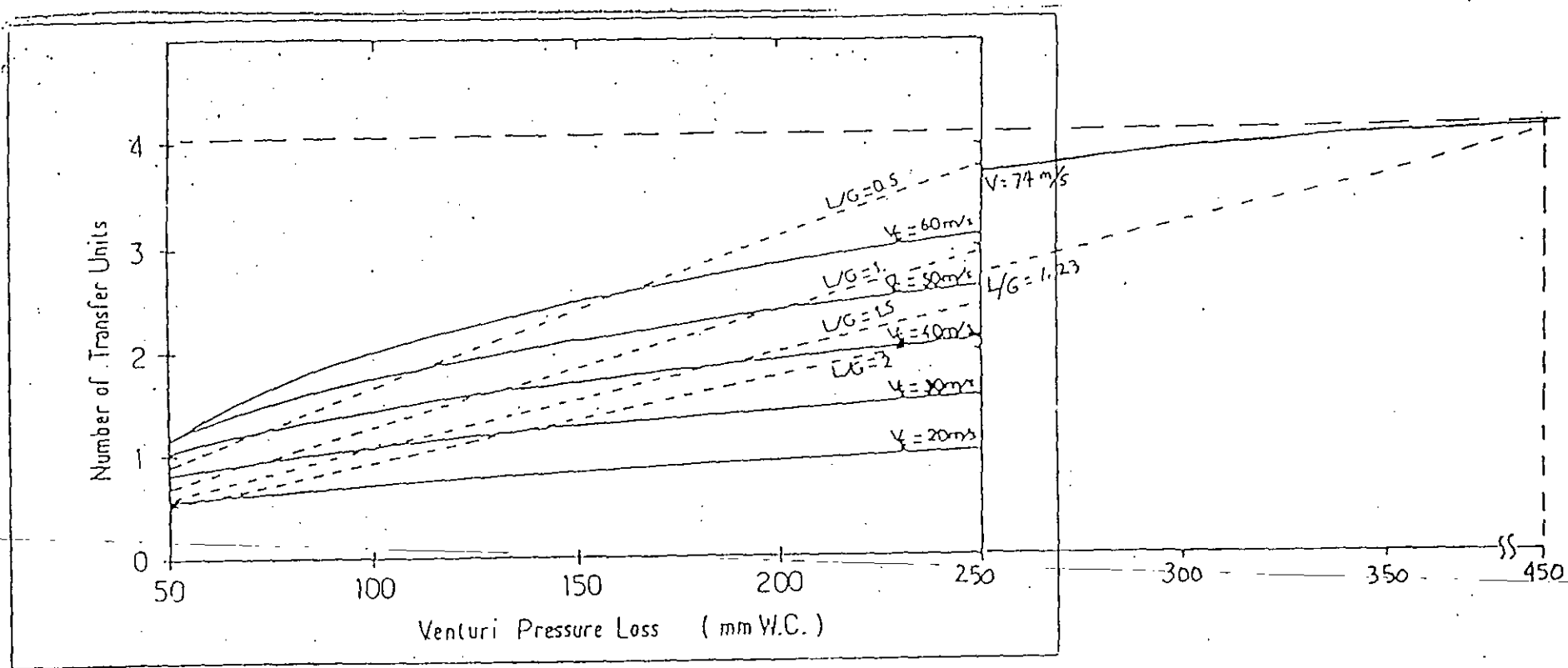


Figure 6. NTU vs. pressure loss. L/G and V_c are taken as parameters. $T_{ce} = 60^\circ\text{C}$ and $L_v/D_c = 8.5$.

Florida Department of
Environmental Protection

Memorandum

TO: Howard L. Rhodes

THROUGH: Clair Fancy *CF*
Al Linero *AL*

FROM: John Reynolds *JR*

DATE: October 13, 1998

SUBJECT: Approval of Final Amended
Construction Permit No. AC53-260190 (PSD-FL-222)
US Agri-Chemicals, Inc.

Approval and signature is requested for issuing the attached final amended construction permit. The facility is a 40.9 tons per hour Monoammonium Phosphate Plant constructed and operated by US Agri-Chemicals, Inc. (USAC) in Fort Meade, Polk County. The permit and BACT determination remain essentially the same as proposed by BAR following our meeting with USAC in April. The delay in issuing the final permit resulted from efforts by USAC to obtain concessions that BAR felt were not appropriate and not agreed to during the April meeting. A letter received from Larry Curtin on September 14 indicates that USAC has decided to accept the permit without further changes. Therefore, it is recommended that the permit be issued at this time.

10/15 Howard

JR/kt

Attachments

The long struggle with this
permit is finally over!

Clair

Clair/Howard - Please sign as USAC has been and
will accept the permit based on Holland & Knight's
letter of September 13. Don't date BACT. We will
apply date on Clerk page when Doug confirms
that petition and hearing have been dismissed.
He and H & K will do that once they know
this has been signed. *AL*

Law Offices

HOLLAND & KNIGHT LLP

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New York	West Palm Beach

September 11, 1998

LAWRENCE N. CURTIN
850-425-5678

VIA FAX

Douglas W. Beason, Esquire
Department of Environmental Protection
2600 BlairStone Road
Twin Towers Office Building, R. 659-E
Tallahassee, Florida 32399-2400

Re: U.S. Agri-Chemicals, Inc. v. Department of Environmental Protection, Case No. 97-4542

Dear Doug:

Based upon our recent telephone conversation, I understand that the changes that we proposed to Specific Condition No. 7 of the draft permit that we received from Clair Fancy and Al Linero have been deemed by the Bureau to be unacceptable. You advised that the rationale for this rejection of our proposed revised language is that the addition is unnecessary.

As I understand the Department's interpretation of the language contained in Specific Condition No. 7, the production rate of the plant may be increased to 60 tons of MAP per hour upon the successful completion of emission testing indicating that the emission rate will be met at that level, and upon processing of an amendment to the current permit. No review of the adequacy of the technology will be performed under those circumstances. Based upon this interpretation, I understand that it has been determined that the language that we proposed does not clarify or add anything to the specific condition.

At the meeting with representatives of the Department, including Howard Rhodes, that occurred earlier this year, we had an understanding that the production rate of the facility could be increased to the originally intended capacity with a minimum review by the Department, assuming that the fluoride emission limit could be met at that level based upon test data. The language that we proposed was an attempt to ensure that this would be the result. Based upon your representations that the language proposed by the

Post-It® Fax Note	7671	Date	9/14	# of pages	2
To	Al Linero	From	Heather		
Co./Dept.		Co.	DGC		
Phone #		Phone #	1-9678		
Fax #	2-6979	Fax #	921-3000		

Mr. Beason
September 11, 1998
Page 2

Department would achieve that result, we will accept the language in Specific Condition No. 7 as proposed by the Department.

This should conclude the matter and obviate the need for a hearing on November 17. We need to discuss the best way to finalize the permit. Please call me so that we can discuss an appropriate procedure.

Sincerely,

HOLLAND & KNIGHT LLP



Lawrence N. Curtin

LNC/jfg

cc: Mr. Howard Rhodes
Mr. Steven J. Susick
Mr. Ron Brunk

TAL-137939