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

BOB GRAHAM
GOVERNOR

JACOB D. VARN
SECRETARY

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

MEMORANDUM CERTIFIED MAIL

TO: Mr. J. R. Terry, Vice President, W. R. Grace & Co.
Mr. M. J. Martinasek, Project Engineer, W. R. Grace & Co.
Mr. P. David Puchaty, DER, S. W. District

FROM: Steve Smallwood - BAQM

DATE: March 28, 1980

SUBJ: W. R. Grace & Co. - AC 53-24460
Application for Permit to Construct DAP Plant

Attached is one copy of the Application, Technical Evaluation and Preliminary Determination, BACT Determination and proposed permit to construct a diammonium phosphate plant with venturi and tail-gas scrubbers at the phosphate fertilizer manufacturing complex located north of Highway 60 west, Bartow, Florida.

Please send any comments which you wish to be considered concerning this action, in writing, to Willard Hanks of the Bureau of Air Quality Management.

Attachment

cc: Jim Estler (w/o attachments)

SS:caa

Technical Evaluation

and

Preliminary Determination

W. R. Grace & Company

Polk County, Florida

Construction Permit

Application Number:

AC 53-24460

Florida Department of Environmental Regulation

Bureau of Air Quality Management

Central Air Permitting

March 28, 1980

I. PROPOSED DEPARTMENT ACTION

The Department of Environmental Regulation (DER) intends to issue W. R. Grace and Company a permit to construct a diammonium phosphate plant (DAP) at its phosphate fertilizer manufacturing complex located north of State Road 60 west, Bartow, Florida. The permit will include conditions to assure compliance with Chapter 17-2, FAC.

Any person may submit written comments on this action to:

Willard Hanks
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32301

Any comments postmarked within 30 days of the date of the published notice will be considered in the Department's final determination regarding construction of this source.

Any person whose substantial interest would be affected by the issuance of this permit may request an administrative hearing by filing a petition as set forth in Section 28-5.15, FAC (copy attached). Such petition must be filed within 14 days of the date of the published notice with:

Mary Clark
Office of General Counsel
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32301

II. SUMMARY OF EMISSIONS AND AIR QUALITY ANALYSIS

a. The proposed plant will be located at the phosphate fertilizer chemical complex on Highway 60 west of Bartow, Florida. This site is "unclassifiable" for the criteria pollutant particulate and "attainment" for the remaining criteria pollutants. However, it is in the "area of influence" for Hillsborough County particulate nonattainment area. W. R. Grace is required to comply with paragraph 17-2.03, BACT, and paragraph 17-2.04, PSD, under the current regulations given in Chapter 17-2,FAC.

b. Best Available Control Technolgoy (BACT) for the DAP plant was determined to be venturi scrubbers using an acid scrubbing medium for the removal of ammonia, particulate and sulfur dioxide, followed by a packed, counter-flow tail-gas scrubber using process water for the removal of fluoride. The emission standards selected as BACT is 0.5 pounds particulate emission per ton P_2O_5 feed.

c. All permitted emissions from the DAP plant will be discharged through a 7 foot diameter, 132.5 foot high stack. The total emission rates and the maximum allowable emission from the DAP plant, based on 7,600 hours per year operation, are:

Pollutant	Rate (lbs./ton P_2O_5 feed)	max lbs/hr	max TPY
Particulate	0.5	19.5	74.1
Sulfur Dioxide	0.7	25	95
Fluoride	0.06	2.34	9.0

III. SYNOPSIS OF APPLICATION

a. Applicant

W. R. Grace & Co.
P. O. Box 471
Bartow, Florida

b. Description of Project and Controls

This project is the proposed construction of an 80 TPH TVA type DAP plant with particulate, ammonia, sulfur dioxide and fluoride emission controlled by 3 dry cyclones, 3 venturi scrubbers and 2 tail-gas scrubbers. The plant will make DAP fertilizer (18-46-0) from anhydrous ammonia, phosphoric acid and sulfuric acid using a gas fired (no. 5 fuel oil stand by) dryer, screens, mills, cooler, granulator, reactor and conveying equipment. The attached process flow diagrams show the manufacturing process and scrubber system design.

c. Description of Process and Abatement System

Phosphoric Acid (39 TPH), sulfuric acid (1.25 TPH), and anhydrous ammonia (19 TPH) are fed to a reactor and form an ammonium phosphate slurry which is pumped to a granulator. In the granulator, additional anhydrous ammonia and recycle DAP (450 TPH) are blended with the slurry and sent to the dryer. The dried material is then conveyed to the process screens. The product size from the screens discharge into the product bin. The oversize material is ground and, along with the undersized DAP and a controlled amount from the product bin, recycled to the granulator. The DAP from the product bin (80 TPH) passes through a cooler and another set of screens before being transported to storage.

Emissions from the reactor and granulator go to the Reactor/granulator scrubber where phosphoric acid removes the ammonia gas and particulate matter. The gases leaving this scrubber then go to the granulator/cooler tail gas scrubber where pond water removes most of the gaseous fluoride pollutant. The gas is then discharged to the atmosphere.

Emissions from the dryer pass through a dry cyclone that removes some of the particulate matter before going to the dryer scrubber where most of the particulate matter and sulfur dioxide are removed with phosphate acid scrubbing liquid. The gases then go the the dryer tail gas scrubber where pond water removes most of the fluoride compounds before the gas is discharged to the atmosphere.

Gases from the product cooler and equipment vents pass through a cyclone before going to the cooler venturi scrubber and then, along with gases from the reactor/granulator), to the granulator/cooler tail gas scrubber.

The phosphate acid used in the venturi scrubber is sent to the process. The tail gas scrubber water recirculates to the process water pond.

VI. RULE APPLICABILITY

The proposed source is a major emitting facility for particulate as defined in 17-2.02(70) FAC. The plant has the potential to emit more than 100 TPY particulate. Therefore, the application is subject to the requirements of 17-2.04, Prevention of Significant Deterioration, and 17-2.03, Best Available Control Technology.

The proposed plant is located in the area of influence for Hillsborough County particulate nonattainment area. Mathematical modeling for maximum particulate and sulfur dioxide concentrations for 3 hours (SO_2 only) and 24 hours (SO_2 and particulate) was performed. Results show the significance levels of particulate and sulfur dioxide are not exceeded. Therefore, the application is not subject to the nonattainment provisions of 17-2.17 FAC.

V. FINDINGS AND PERMIT CONDITIONS

1. On the basis of air quality modeling performed in accordance with applicable DER guidance, particulate and sulfur dioxide emissions will not contribute to ground level concentrations in exceedance of any PSD class II increment as specified by 17-2.04(1)(b). These emissions were also found not to have an impact on any particulate matter or sulfur dioxide nonattainment area or PSD class I area nor will they contribute to ground level concentrations in excess of ambient air quality standards. Thus, the application is exempt from the requirements of paragraphs 17-2.17 and 17-2.04(8) of Chapter 17-2, FAC.

2. The proposed new source is classified as a major emitting facility (one with the potential of emitting in excess of 100 T/yr of any air pollutant) for particulate matter. Therefore under 17-2.03, FAC, a BACT determination was required. Emission limitations under this rule for particulate matter was determined to be 0.5 lbs/TP_2O_5 feed and 19.5 lbs/hr.

3. The permitted emissions for all pollutants will be:

Pollutant	Rate lb/TP_2O_5	Maximum Allowable lbs/hr	T/yr
Particulate	0.5	19.5	74.1
Sulfur Dioxide	0.7	25	95
Fluoride	0.06	2.3	9

These emissions are based on all emissions from the plant being controlled by (3) venturi and (2) tail gas scrubbers.

4. Maximum operation time will be 7,600 hours per year.

5. Maximum production rate will be 80 TPH DAP.

6. Maximum sulfur content of the fuel oil will be 2.3%.

7. Fugitive particulate and fluoride emissions in the plant will be controlled by sealing and venting all fumes from the process equipment to pollution control equipment.

8. Construction will commence and be completed within a reasonable time based on the projections included in the application.

9. Construction will reasonably conform to the plans submitted.

10. The applicant will submit quarterly reports on construction progress (% completion) until the permit to construct expires or is replaced by a permit to operate.

11. The applicant will install, calibrate, maintain, operate and record data from flow monitoring devices that measure total phosphorus input to the plant and continuously measure and record the total pressure drops across each scrubbing system. Pressure drop across the venturi scrubber must be 12 inches water or greater during plant operations. Records will be maintained for 2 years and made available to regulatory personnel on request.

12. Before the construction permit expires, the DAP plant will be sampled for particulate, fluoride and sulfur dioxide (while the dryer is being fired with oil). Test will be made in accordance with EPA reference methods 1, 2, 3, 5, 6 and 13A or 13B as published in 40 CFR 60, Appendix A, dated July 1, 1978 or by any alternate method approved by DER.

13. DER will be notified 30 days in advance of the compliance tests. Tests will be conducted when the plant is operating at permitted capacity while burning oil containing the maximum amount of sulfur allowed. P_2O_5 input, pH of the scrubber solution, pressure drop across the scrubbers and other process parameters will be normal for this plant's operation during any emission tests and the value of the operation parameters will be reported, along with test data and results, at least 90 days before the construction period expires.

14. Periodic emission test or test on request of DER will be a condition to any permit to operate this plant.

15. A complete application for permit to operate will be submitted to DER Southwest District office 90 days before this construction permit expires.

16. Stack sampling facilities will include the eyebolt and angle described in the attached figures.

17. Test plan to show compliance must be approved by DER. Upon demonstration of compliance with the operational limits of this permit and submission of a complete application for an operation permit to DER's S. W. District Office, prior to 90 days before expiration of permit no. AC 53-24460, the permittee may continue to operate in compliance with all terms of this permit until expiration of this permit or issuance of an operating permit.

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;

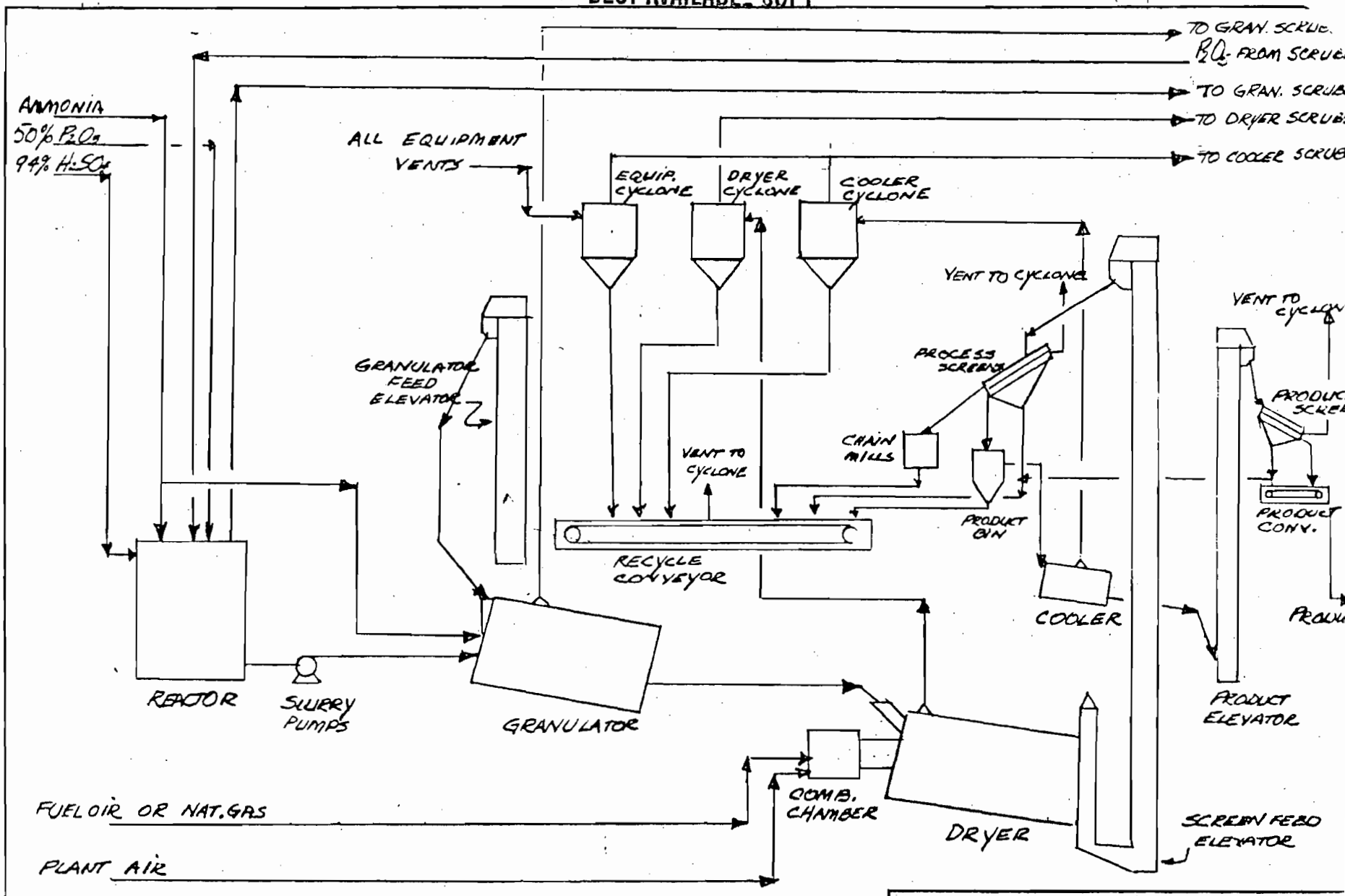
(c) All disputed issues of material fact. If there are none, the petition must so indicate;

(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.

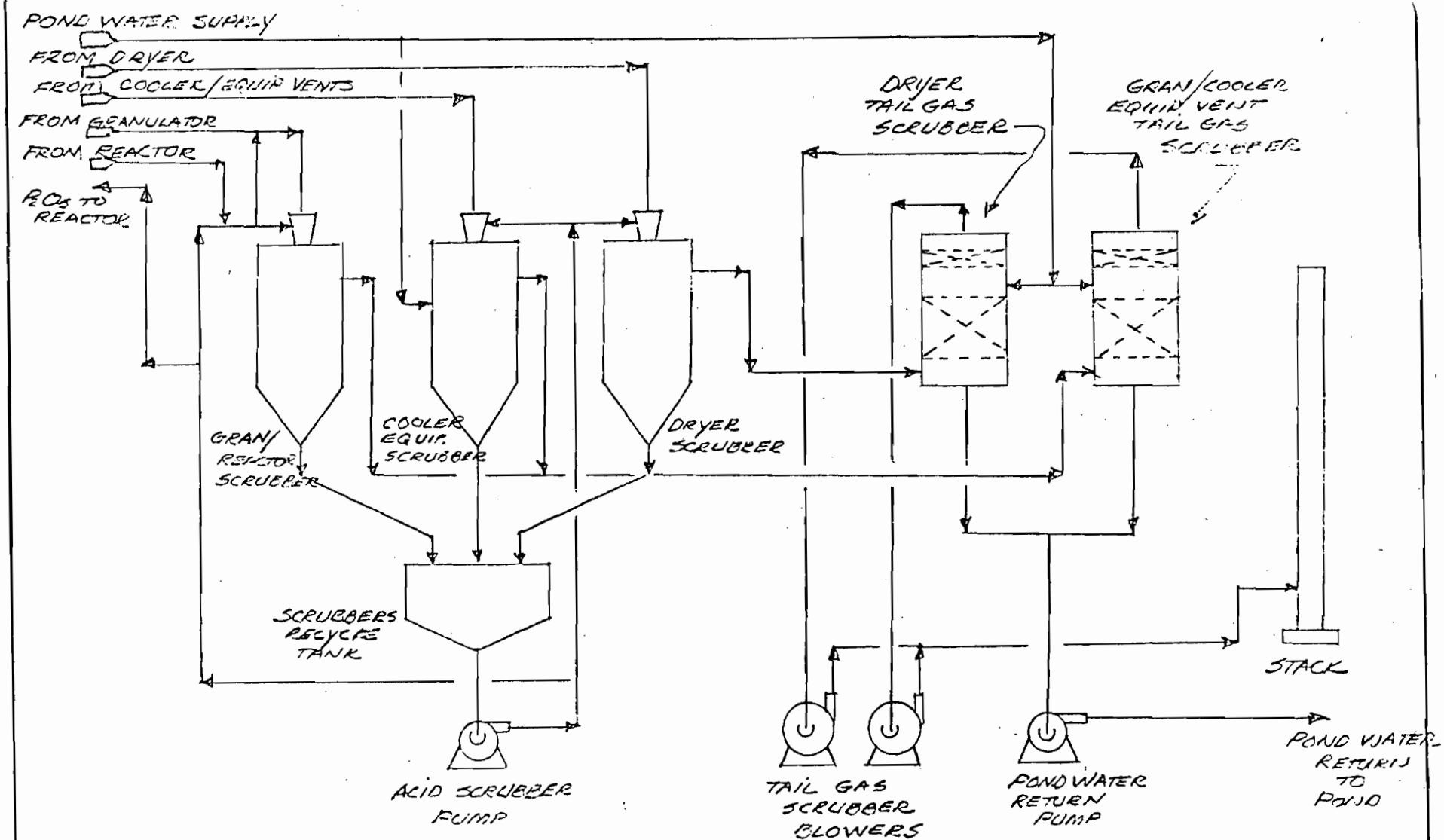


W. R. GRACE & CO.
AGRICULTURAL CHEMICALS
BARTOW, FLORIDA

DAP GRANULATION PLANT
PROCESS FLOW DIAGRAM - PROCESS

DRAWN: H. CORTES	12/79	D'W'G. NO. 1

Sect. V, 6.



W. R. GRACE & CO.
AGRICULTURAL CHEMICALS
BARTOW, FLORIDA

DAP GRANULATION PLANT
PROCESS FLOW DIAGRAM
SCRUBBER SYSTEM

DRAWN: H. CORTES | D'W'G. NO. 2

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

BOB GRAHAM
GOVERNOR

JACOB D. VARN
SECRETARY

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

APPLICANT: W. R. Grace & Company
P. O. Box 471
Bartow, Florida 33830

PERMIT/CERTIFICATION NO. AC 58-24460

COUNTY: Polk County

PROJECT: DAP/Fertililzer Plant

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

For the construction of a diammonium phosphate plant to be located at the permittee's phosphate fertilizer complex north of State Road 60 west, Bartow, Florida. The latitude, longitude and UTM coordinates of the proposed plant are 27°54'13"N by 81°55'17"W and 409.290E, 3,086.870N respectively.

Construction shall be in accordance with the attached permit application, plans, documents and drawings except as otherwise noted in the following list of "Specific Conditions".

Attachments are as follows:

1. Application to Construct Air Pollution Sources, DER form 17-1.122(16).

2. Figure, Stack Test Faciliites.

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 Section 403.161(1), Florida Statutes. Permittee is hereby placed

PERMIT NO.: AC 53-24460
APPLICANT: W. R. Grace & Co.
Bartow, Florida

on notice that the department will review this permit periodically and may initiate court 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 indicated in the attached drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit shall constitute grounds for revocation and enforcement action by the department.

3. 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 non-compliance, including exact 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 revocation of this permit.

4. As provided in subsection 403.087(6), 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.

5. This permit is required to be posted in a conspicuous location at the work site or source during the entire period of construction or operation.

6. 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 Section 403.111, F.S.

7. In the case of an operation permit, 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.

8. 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 penalities 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, except where specifically authorized by an order from the department granting a variance or exception from department rules or state statutes.

9. This permit is not transferable. Upon sale or legal transfer of the property or facility covered by this permit, the permittee shall notify the department within thirty (30) days. The new owner must apply for a permit transfer within thirty (30) days. The permittee shall be liable for any non-compliance of the permitted source until the transferee applies for and receives a transfer of permit.

10. The permittee, by acceptance of this permit, specifically agrees to allow access to permitted source at reasonable times by department personnel presenting credentials for the purposes of inspection and testing to determine compliance with this permit and department rules.

11. This permit does not indicate a waiver of or approval of any other department permit that may be required for other aspects of the total project.

12. This permit conveys no title to land or water, nor constitutes state recognition or acknowledgement of title, and does not constitute authority for the reclamation 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.

13. This permit also constitutes:

[ ] Determination of Best Available Control Technology (BACT)
[ ] Determination of Prevention of Significant Deterioration (PSD)
[ ] Certification of Compliance with State Water Quality Standards (Section 401, PL 92-500)

SPECIFIC CONDITIONS:

PERMIT NO.: AC 53-24460
APPLICANT: W. R. Grace & Company

Specific Conditions

1. The maximum production rate of the plant will be 80 TPH DAP (18-46-0) and the plant shall operate a maximum of 7,600 hours per year.

2. The allowable emissions from the 7 foot diameter, 132.5 foot high stach for the DAP plant will be:

Pollutant	Emission Rate	Maximum Emissions lbs/hr	T/yr.
Particulate	0.5	19.5	74.1
Sulfur Dioxide	0.7	25.0	95
Fluoride	0.06	2.34	9

3. Fugitive particulate and fluoride emissions from the process, conveying and storage equipment will be controlled by sealing and/or venting all fumes from the equipment to pollution abatement devices.

4. No. 5 fuel oil used by the dryer shall not contain more than 2.3% sulfur.

5. Construction shall commence and be completed within a reasonable time based on the schedule given the application. Construction will reasonably conform to the plans submitted.

6. Reasonable precautions to prevent fugitive emissions during construction, such as coating or spraying roads and construction sites used by contractors with a liquid to prevent dust, will be taken by the permittee.

7. Quarterly progress reports showing approximate percent completion of modifications and construction of new and affected existing facilities will be submitted to the Department until construction permit AC 53-24460 expires or

is replaced by a permit to operate.

8. The permittee will install, calibrate, maintain, operate and record data from flow monitoring devices that can be used to determine total P_2O_5 input to the plant.

9. The permittee will measure and record the pressure drop of the gas stream across each scrubber system. Pressure drop across the venturi scrubber must be at least 12 inches water during plant operations. The records will be maintained for 2 years and available for inspection by regulatory agency personnel on request.

10. Permittee shall submit a test plan for approval and notify the Bureau of Air Quality Management prior to any compliance testing of the facility. Upon demonstration of compliance with the operational limits of this permit the permittee shall submit a complete application for an operating permit to the Southwest District office. The application must be submitted at least 90 days before expiration of the construction permit. Permittee may continue to operate in compliance with all terms of this permit until expiration of this permit or issuance of an operating permit.

11. DER will be notified 30 days in advance of the compliance test. The test procedures will be EPA reference methods 1, 2, 3, 4, 5, 6 and 13A or 13B as described in 40 CFR 60, Appendix A or any approved alternate test method. The test will be conducted with the plant operating at 80 TPH DAP (±10%) with the dryer burning fuel oil containing 2.3% sulfur (±10%).

12. Periodic emissions tests or tests by the request of the Department at the sources expense will be a condition to any pelrmit to operate. If the source can furnish a study on this source showing a high correlation (.95+) between the emission of any pollutant and plant operation parameters, the periodic emission test for that pollutant may be waived by the Department.

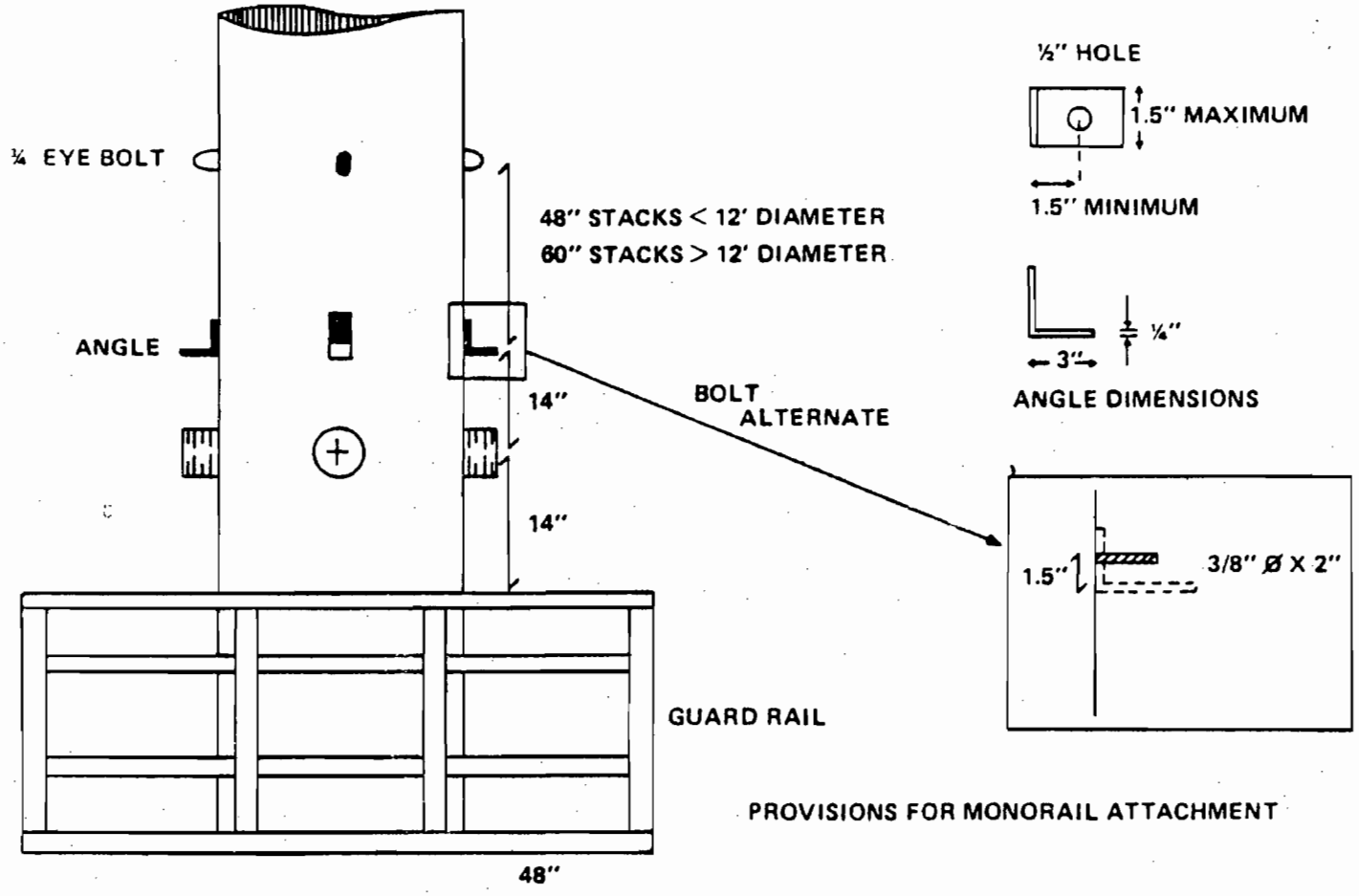
13. Stack sampling facilities will include the eyebolt and angle described in the attached sketch.

Expiration Date: March 31, 1982

Issued this _____ day of _____, 19 _____.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

AN EYEBOLT AND ANGLE SHALL BE ATTACHED DIRECTLY ABOVE EACH PORT OF VERTICAL STACKS AND ABOVE EACH VERTICAL SET OF PORTS FOUND ON THE SIDES OF HORIZONTAL DUCTWORK 1.6 WORKING PLATFORMS. THE DIMENSIONS AND PLACEMENT OF THESE FIXTURES ARE SHOWN IN FIGURE 1-1.



IF EYEBOLT IS MORE THAN 120 INCHES ABOVE THE PLATFORM A PIECE OF CHAIN SHOULD BE ATTACHED TO IT TO BRING THE POINT OF ATTACHMENT WITHIN SAFE REACH. THE EYEBOLT SHOULD BE CAPABLE OF SUPPORTING A 500 POUND WORKING LOAD.

FIGURE 12 - 1

State of Florida

DEPARTMENT OF ENVIRONMENTAL REGULATION

INTEROFFICE MEMORANDUM

For Routing To District Offices And/Or To Other Than The Addressee

To: _____ Loctn.: _____

To: _____ Loctn.: _____

To: _____ Loctn.: _____

From: _____ Date: _____

TO: Jacob D. Varn

FROM: Steve Smallwood MK for SS

DATE: March 28, 1980

SUBJECT: BACT Determination - Diammonium Phosphate Plant, W. R. Grace & Company, Polk County

Facility: An 80 ton per hour diammonium phosphate (DAP) plant. The plant will produce DAP fertilizer (18-46-0) from anhydrous ammonia, phosphoric acid and sulfuric acid using a gas fired (No. 5 fuel oil standby) dryer, screens, mills, cooler, granulator, reactor and conveying equipment. Estimated potential emissions of pollutants subject to the BACT rule are:

Particulate	3,000 tons/year

BACT Determination Requested by the Applicant:

Pollutant	Maximum Emission
Fluoride	0.06 lb/ton P_2O_5 Feed
DAP Particulate	34 lb/hr or 130 TPY

Date of Receipt of a Complete BACT Application:

February 5, 1980

Date of Publication in the Florida Administrative Weekly:

March 28, 1980

Date of Publication in a Newspaper of General Circulation:

April 2, 1980, Tampa Tribune

Study Group Members:

Thomas Davis, DER South Florida District, Ft. Myers;
Pepe de Castro, DER Bureau of Wastewater Management & Grants Tallahassee;
Johnny Cole, DER St. Johns River District, Jacksonville;
Robert Garrett, DER Southwest District, Tampa;
Joseph Griffiths, Hillsborough County Pollution Control, Tampa;
Willard Hanks, DER Bureau of Air Quality Management, Tallahassee

Study Group Recommendations:

	Particulate lb/Ton P_2O_5
Thomas Davis	0.50 (0.015 gr/scf)
Pepe de Castro	0.62 (0.02 gr/scf)
Johnny Cole	1.0 (34 lb/hr)
Robert Garrett	0.33 (0.15 lb/ton DAP)
Joseph Griffiths	0.93 (0.03 gr/scf)
Willard Hanks	0.43 (0.20 lb/TDSP)

BACT Determination by Florida Department of Environmental Regulation:

Pollutant	Maximum Emission
Particulate	0.5 lb/TP_2O_5

Justification of DER Determination:

Particulate Matter: The 0.5 lb/ton P_2O_5 emission limit reduces the applicant's permit request by a factor of 2. However, similarly designed plants can meet this limit selected as representative of Best Available Control Technology.

Details of the Analysis May be Obtained by Contacting:

Victoria Martinez, BACT Coordinator
Department of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Twin Towers Office Building
Tallahassee, Florida 32301

Recommendation from: Bureau of Air Quality Management

By: Martin Kabel for
Steve Smallwood

Date: March 31, 1980

Approved by: Jacob D. Varn
Jacob D. Varn

Date: 31 ST March 1980

SS:jr
attachment

State of Florida

DEPARTMENT OF ENVIRONMENTAL REGULATION

INTEROFFICE MEMORANDUM

For Routing To District Offices And/Or To Other Than The Addressee	
To: _____	Loctn.: _____
To: _____	Loctn.: _____
To: _____	Loctn.: _____
From: _____	Date: _____

ST. JOHNS RIVER SUBDISTRICT, JACKSONVILLE

TO: Vicky Martinez
BAQM

FROM: Johnny Cole

DATE: March 12, 1980

SUBJECT: BACT Determination for DAP Plants

My recommendations are as follows:

1. For fluoride, the 17-2 limit which is the same as NSPS (0.06 lb F per ton of P_2O_5 input) should be used unless there is some local ambient problem that requires a smaller limit.

2. For particulates, the proposed controls should be BACT. Emission limits should be the rates used in each model unless the model and/or results are not acceptable. In such case, run a CRSTER to establish a limit. Limits in applications:

Gardinier	maximum 10 lbs/hr
New Wales	model needed
Grace	run model; proposed 34 lbs/hr as avg. On PSD page, stated $\leq$ 50 TPY while on page 3 stated 140 TPY.

3. For SO_2, the use of 2.5% sulfur fuel oil should be BACT.

4. For ammonia, the proposed scrubbers to control other emissions should be BACT.

5. For NO_X, the proposed controls and the nature of the process should be considered BACT.

6. Unless these sources can document otherwise, the acid input should be limited to a 30%-50% P_2O_5 split acid feed.

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

INTEROFFICE MEMORANDUM

For Routing To District Offices And/Or To Other Than The Addressee
To: _____ Locln.: _____
To: _____ Locln.: _____
To: _____ Locln.: _____
From: _____ Date: _____

TO: Victoria Martinez, BACT Coordinator

FROM: Willard Hanks WMH

DATE: March 5, 1980

SUBJ: Bact Determination - Diammonium Phosphate Plants (DAP)
W. R. Grace & Co./Gardinier, Inc./New Wales Chemical Co.

The applications for permits to construct DAP plants for the subject companies along with emission data from USS Agri-Chemicals and other DAP plants has been reviewed. The control equipment selected by the applicant appears to be the best type available for the process. However, the Department does not have the information needed to establish a standard for particulate and sulfur dioxide emissions from these plants. To the best of my knowledge, the information is not available and a special study program would be required to obtain the data.

I suggest the BACT determinations of emissions standards for these plants be postponed until the plants are built and in operation. The standards would be established based on tests of the actual emission from the facility. This could be handled by the permits to contruct listing operation parameters for the control devices and specifying a test program to determine the emission standards. The provisions could also contain a maximum allowable emission, based on the PSD study, which would be permitted. Suggested wording of the permit provisions would be:

1. The emission standards for particulate and sulfur dioxide will be established by a series of emission tests conducted under the Department's supervision at the expense of the applicants with the control devices operating at the following conditions:

Company	Plant Capacity TPH DAP	MIN. ΔP VENTURI (in. H_2O)	MIN. GPM FROM VENTURI	MIN. GPM FROM TAIL GAS	% SULFUR IN FUEL OIL	P_2O_5 CONTENT OF VENTURI SCRUBBER LIQ
W. R. GRACE	80	12	2,500 total for 3 scrubbers	4,000 total for 2 scrubbers	2.3	20-30
GARDINIER	50	12	1,600 total for 3 scrubbers	2,600 total for 2 scrubbers	2.0	20-30
NEW WALES	70/Train (140 TOTAL)	12	1,600/Train	6,000/Train	2.5	20-30

DEP Form 7-76

2. A minimum of 3 test (9 runs) using EPA reference methods 1,2,3,4,5 and 6, as published in 40 CFR 60, Appendix A, dated 7/1/78 will be the basis of the study. One test will be conducted while the scrubbers are clean, one prior to scheduled shutdown for plant for clean up or 6 month-whichever is first, and one about midway between these tests. The plant will be operating near its permitted rate (±10%) with the dryer burning oil containing the maximum per cent sulfur allowed (±15%) during all tests. The standard selected for the source may be up to 10% above the average for all tests but, under no circumstances, will exceed the intern values listed in the construction permit.

3. The Department will be notified 30 days in advance of any test that will be used in establishing the BACT emissions. All valid test data collected during the test period will be considered in establishing the standard.

4. Intern emission standards should be:

Company	Particulate			Sulfur Dioxide	
	Grains/DSCF	lbs/TDAP	lbs/hr.	lbs/TDAP	lbs/hr
W.R. Grace	0.020	0.29	23.0	0.30	25
Gardinier*	0.016	0.23	11.4	0.30	15
New Wales**	0.020	0.23	32.0	0.30	44

5. The fluoride standard is 0.06 lbs. total fluoride per ton P_2O_5 input as measured by reference method 13 A or 13 B as published in 40 CFR 60, Appendix A, dated 7/1/78.

If BACT cannot be established after the plants are built, I recommend the particulate standard be set at 0.20 lbs/TDAP for a total complex which corresponds to the 99.9 percentile of the emission data reported for USS Agri-Chemicals new DAP plant. The sulfur dioxide standard should be 0.30 lbs/TDAP, which is approximately what 2 of the plants requested in their application.

* PSD regulations forces this Company to meet more restrictive emission standards

** For venturi/tailgas scrubber system only. The 0.01 grains/DSCF and 4.42 lbs/hr. for the bag filter serving the cooler is acceptable for BACT.

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

INTEROFFICE MEMORANDUM

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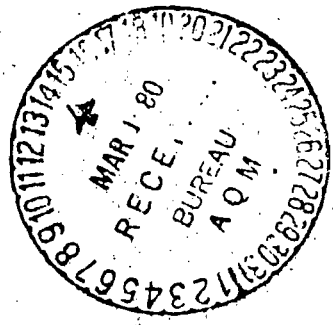


TO: Victoria Martinez

THRU: Steve Smallwood
Philip R. Edwards PRE

FROM: Tom Davis TRD

DATE: March 11, 1980

SUBJECT: BACT Determination - DAP Fertilizer Plants

My review of the three BACT applications indicates that all would qualify for BACT review for particulates, sulfur dioxide, and fluoride emissions (these pollutants in all applications exceed the 100 ton/yr potential criteria as listed in Chapter 17-2).

My BACT recommendation for each pollutant is as follows:

(1) Fluorides - inasmuch as Chapter 17-2.03(1)(a) implies that NSPS should be considered as BACT, the NSPS of 0.060 lbs F/ton of P_2O_5 feed is recommended.

(2) Sulfur Dioxide - the applications indicate there is a SO_2 removal rate in the DAP process of between 60% to 70%. Fuel consumption rates vary between 4.0 and 6.0 gal/ton of P_2O_5 feed. It is recommended that the BACT SO_2 limit be issued as 0.70 lbs. SO_2/ton of P_2O_5 feed. This is equivalent to using 1%S fuel based upon an average consumption rate of 4.5 gal/ton of P_2O_5. The data supplied by Gardinier showed an unusually high fuel consumption rate - roughly 1.4 times the other two facilities. Since there should not be any reason for a large difference between facilities, the Gardinier data was adjusted downwind using a factor of 2 gallons/ton of DAP for fuel usage. The figure of 4.5 gal/ton of P_2O_5 feed fuel usage was the highest value supplied of the three applications (after adjusting the Gardinier data). Accordingly, it is felt that BACT proposed should be readily achievable by all three facilities (Gardinier estimates a SO_2 emission rate of 10 lbs/hr - the proposed BACT would allow 15.8 lbs/hr). It is noted there was virtually no information provided on the economics of low vs high sulfur fuel oil. However, the recommendation offered is felt to be reasonable in that it would allow use of 2.5%S fuel.

(3) Particulate - there is little data in the applications pertaining to existing particulate emission rates from DAP plants equipped with the technology proposed - venturi scrubbers followed by a packed tower. Based upon the data provided, a recommendation of 0.50 lbs. particulate/ton P_2O_5 feed is offered. This is equivalent to an exi t grain loading of 0.150 grains/scf. The test history and statements contained in the New Whales Chemicals, Inc. application support this level.

In summary, the following is recommended as BACT for the DAP plants:

Pollutant	Emission Limit (lbs/ton P_2O_5 feed)
Fluorides	0.060
Sulfur Dioxide	0.70
Particulates	0.50

In general, it is felt compliance determination would be facilitated if all emission limits were expressed on the same basis. It is also noted that the above limits are meant to apply as <u>total</u> emissions from the DAP plants; i.e. all measurable discharge points - scrubbers, baghouses, etc - would be combined in determining compliance. The tons P_2O_5 feed refers to the plant input to the reactor.

If there are any questions concerning this matter, please contact me.

/lp

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

INTEROFFICE MEMORANDUM

For Routing To District Offices And/Or To Other Than The Addressee
To: Victoria Martinez Loctn.:
To: Loctn.:
To: Loctn.:
From: Date:

TO: Ms. Victoria Martinez, BACT Coordinator (Air)

FROM: Jose F. deCastro, CH.E., P.E., Administrator, Industrial Waste Section

DATE: March 11, 1980

SUBJECT: BACT Determination for Three DAP Plants: W. R. Grace, Gardinier, and New Wales

We have reviewed the packages attached to your memorandum of February 22, 1980, held a technical meeting with W. R. Grace representatives and their consultant, Dr. Koogler, and finally discussed the issue with members of the DER staff. Unfortunately, the performance data that we have been able to see does not, in our professional opinion, suit too well for developing BACT (DAP) limitations for the following reasons:

. Particulate emissions from DAP plants are affected by some controllable and one quasi-uncontrollable factor; to wit, the quality of the tail-gas scrubber water.

Emissions from two identically operated twin plants are dependent on the solids concentration in the tail-gas scrubber water.

The performance of a tail-gas scrubber utilizing once-through rain water from an abandoned phosphate mine pit should by far surpass that from the same unit operating with saturated process-recycled water.

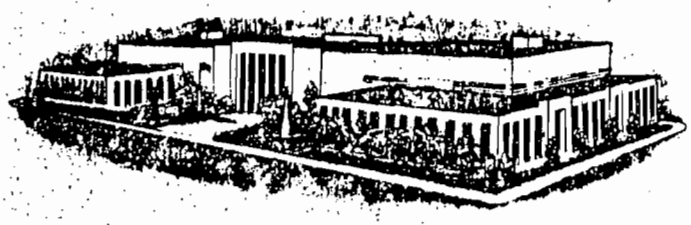
. Stack plumes from DAP plants contain steam generated from the scrubber water countercurrently heated by ascending hot residual process gases. Dissolved solids in the evaporated scrubber water increasingly deposit on the scrubber packing and eventually report as dust in the stack test.

Particulate grain loadings as periodically reported by DAP operators most certainly reflect optimum performances of their systems immediately after maintenance and cleaning operations. Rarely these emissions reflect fact-of-life performances and should be used with care.

SUMMARIZING: Self-stack-sampling results as reported by DAP operation (USSAC) that have easy access to and employ once-through rain water from an old mine pit are not representative of fact-of-life performances and should not be used to set BACT limits, even for such operation (USSAC). At least monthly stack samples throughout the usual six-month span between maintenance operations would be required to assess BACT values. Plant shut-down for cleaning purposes are forced by pressure build-up due to fouling of the scrubber packing. What is the particulate grain loading of (USSAC) stack just prior to shut down?

CONCLUSION: Based on previous field experience, it is our professional opinion that .02 GR./SCF of particulate matter is as reasonably low a stack loading as could be expected from a DAP plant at all times. We recommend such value as BACT limitation for calculation purposes.

JFd/la



COUNTY of HILLSBOROUGH

MEMORANDUM

Date March 11, 1980

To Victoria Martinez - FDER

From Joe Griffiths - Env. Prot. Comm.

Subject: BACT for DAP plants

The proposed BACT plans submitted for the three various facilities: W. R. Grace, Gardinier, New Wales; all suggest the same technology for control of air emissions. Basically, they all propose venturi scrubbers using packed towers as tail gas scrubbers with the exception of New Wales which proposes to use a baghouse for the cooler's emissions. From data gained in recent stack tests for C. F. Industries DAP plant it is apparent that particulate control is much better or should be much better than the present process weight table allows. Therefore, I propose 0.03 gr/scf as the emission limit on the wet collection devices and 0.015 gr/scf on the baghouse.

The 0.03 gr/scf limit has been achieved by the latest wet collection devices installed throughout Hillsborough County on other phosphate processes and therefore represents BACT in my opinion.

The 0.015 gr/scf limit on the baghouse has been shown to be achievable and is guaranteed by most manufacturers. Use of a baghouse on the product storage doesn't present any problem and would be very efficient; however, it appears some fluoride emissions are possible at this point and in order to ascertain the quantity an initial test for fluorides is recommended.

The emission limit for Fluorides listed in FAC 17-2 of 0.06 lbs F/ton P_2O_5 appears to be on the high side for most new plants. Data from past stack tests for other DAP plants indicates emissions lower than 0.03 lbsF/ton P_2O_5 in one case and lower than 0.02 lbsF/ton P_2O_5 in another. I therefore recommend an emission limit of 0.04 lbsF/ton P_2O_5. Since there are no emission limits for SO_2 or Ammonia there is no reason to recommend an emission level. However, I would recommend an ammonia level be established in the near future for existing and new sources of ammonia.

If you have any questions, please call.

JG/fd

DEPARTMI REGULATION

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TO: Victoria Martinez/Willard Hanks

THRU: Dan Williams

FROM: Bob Garrett

DATE: March 5, 1980

SUBJECT: DAP Plant Histories and BACT Recommendations

Enclosed is a tabulation of 2 years of tests from 6 DAP plants in the Bartow area representing old and relatively new plants or modifications thereto. Also, I have included information from the sources indicating the different complexities of these controls.

lbs/T DAP	Plant	Permit	Last Test Date	Results lbs/hr	Product Rate(DAP)	Previous High	Prev. Low
.135 #/Ton	Grace	AO53-6840	3/79	7.0	52 TPH	15	5.9
.2 #/Ton	CF Ind.#3	AO53-6684	8/79	10.7	54.1 TPH	14.7	4.9
	Recycle Process = 292 TPH						
.26 #/Ton	CF Ind.#4	AO53-6005	8/79	19.45	74.3 TPH	43.4	11.7
	Recycle Process = 401 TPH						
.65 #/Ton	Conserv	AC53-19217	4/79	35.9	55 TPH	-	-
	Recently modified with 3 separate scrubbers & stacks						
.09 #/Ton	New Wales	AO53-5976	9/79	8.6	96 TPH	40.5	8.5
	Note their letter of recent modifications (results not reported yet						
.066	USS Agr-Ch	AO53-5119	1/80	4.62	70 TPH	9.24	2.8
	Recycle Process = 549 TPH						

Recommend a limit of 0.15 lbs. particulates/Ton of DAP product for BACT for DAP plants. We have eliminated Conserv from the averages because of their recent changes, low production and separate stack controls. Combining the others produces an average of 0.15 lb/T DAP for recent tests on a mixture of relatively new and rejuvenated old plants.

Recommend a limit of 0.06 lbs. F^-/T P_2O_5 as the NSPS standard.

RRG/ftb