2-8-80
W. M. Hartley

PARTICULATE BACT FOR TVA TYPE DAP PLANT

COMPANY	PROD-TPH P_2O_5	PROD-TPH DAP	PROCESS EQUIPMENT	CONTROL DEVICE	CAPITAL* COST-10^6	ACFM	°F TEMP	DSCFM	COST $/TDAP	PART. EMISSIONS LBS/HR	LBS/TDAP	GRAINS/DSCF	CONTROL EFFICIENCY	$/ACFM
USS ACC (APPLIC TO CONST DATA)	33.4	72	PLANT	VENTURI-TAILGAS SCRUB	3.4 (EST 50% COST BATTERY LIMITS)	110,000	90	100,320	47,222	33.8 (APPL)	0.469	0.0393	95	$30.91
W. R. GRACE 1 TRAIN 1 STACK (3 VEN+2 TAILG)	39	80	GRAN.-REACT	CYC/VEN/ SHARED TAIL-GAS SCRUB	$2.3	160,000	110-120	133,274	$28,750	37 (MAX)	0.463	0.0324	96	$14.38
			DRYER	CYC/VEN/ OWN TAIL G.										
			COOLER/CONV.	CYC/VEN/ SHARED TAIL GAS SCRUB										
NEW WALES (2 TRAINS) COMMON COOLER 2 SCRUB. STACKS 1 COOLER SK.	70	140	GRAN-REACT	VEN/TAIL	$6	104,400		93232	$42,857	36.43 (CALC*)	0.260	0.02 SCRUB, 0.01 BAG-F 0.018 LIGHT ANC	UNK	$57.47
			DRYER	CYC VEN/TAIL										
			COOLER	CYC BAG FILT.										
			TRAIN B			104,400		93232						
GARDINIER	22.52	50	GRAN-REACT	VENTURI-TAILGAS SCRUB	$1.4**	101,318	116	83,587	$28,000**	10.0	0.2	0.0140	98	$13.82
			DRYER	CYC/VENTURI/ TAILGAS S.										
			COOLER/CONV.	CYC/VENTURI/ TAIL GAS										

** MAY NOT INCLUDE COST OF VENTURI SCRUBBER.
* COST BASIS QUESTIONABLE, PROBABLY INCONSISTANT.

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: Victoria Martinez, BACT Coordinator

THRU: Bill Thomas

FROM: Willard Hanks wmh

DATE: February 11, 1980

SUBJ: BACT Determination - Diammonium Phosphate Plants W.R. Grace & Co./Gardinier, Inc./New Wales Chemical Company

The three subject companies have submitted applications for permits to construct diammonium phosphate plants (DAP) in Central Florida. I request a committee be established to determine BACT for DAP plants.

A summary of data from the applications for the three companies is attached. Also included is data from an existing DAP plant owned by USS Agri-chemicals Company.

Based on this information, I recommend the BACT emission limits be set at the following levels.

Proposed BACT Emission Limits for DAP Plants

Pollutant	Grains/DSCF	lbs/TDAP	Other
Particulate	0.011	0.16	-
Sulfur Dioxide	0.02	0.3	
Fluoride			0.06 lbs/TP_2O_5
Opacity			20% max.

The proposed particulate emission is based on test data from USS Agri-Chemical Company. The proposed sulfur dioxide limit is based on New Wales' BACT Study.

Some miscellaneous comment about these applications are:

1. All applicants have referred to USS Agri-Chemicals DAP plant as the best controlled plant in existance now.

2. USS Agri-Chemicals has measured particulate and fluoride emission from their DAP plant on a number of occasions. A summary of their test results is attached.

3. USS Agri-Chemicals actual particulate emission is less than the allowable emission.

4. W. R. Grace is requesting to be permitted at the particulate emission level allowed for the USS Agri-Chemical DAP plant.

5. New Wales Chemical Company provided the most data in the BACT section of the application. This company plans to use a bag collector on some process/conveying equipment that other applicants plan to control with scrubbers.

6. Gardinier, Inc. has listed the lowest emissions for the DAP plant in their application but indicate they are estimates.

7. New Wales Chemical Company has done more tests for sulfur dioxide emissions from DAP plants than the other companies.

8. All companies proposed NSPS for fluoride emissions.

Please have the applications evaluated and notify me if you concur with the proposed emission limits.

Attachment

cc: Mark Hodges
file

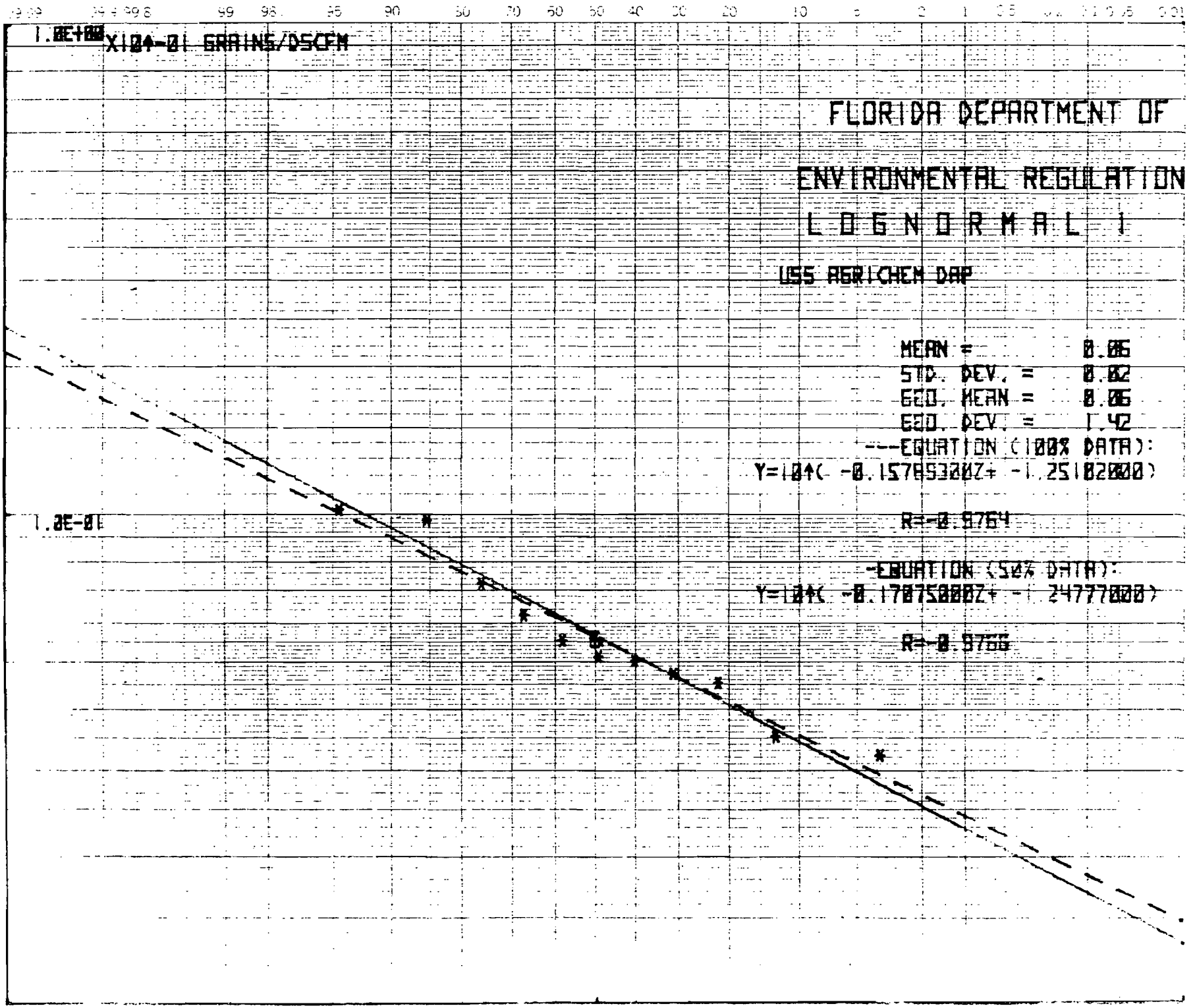
WH:caa

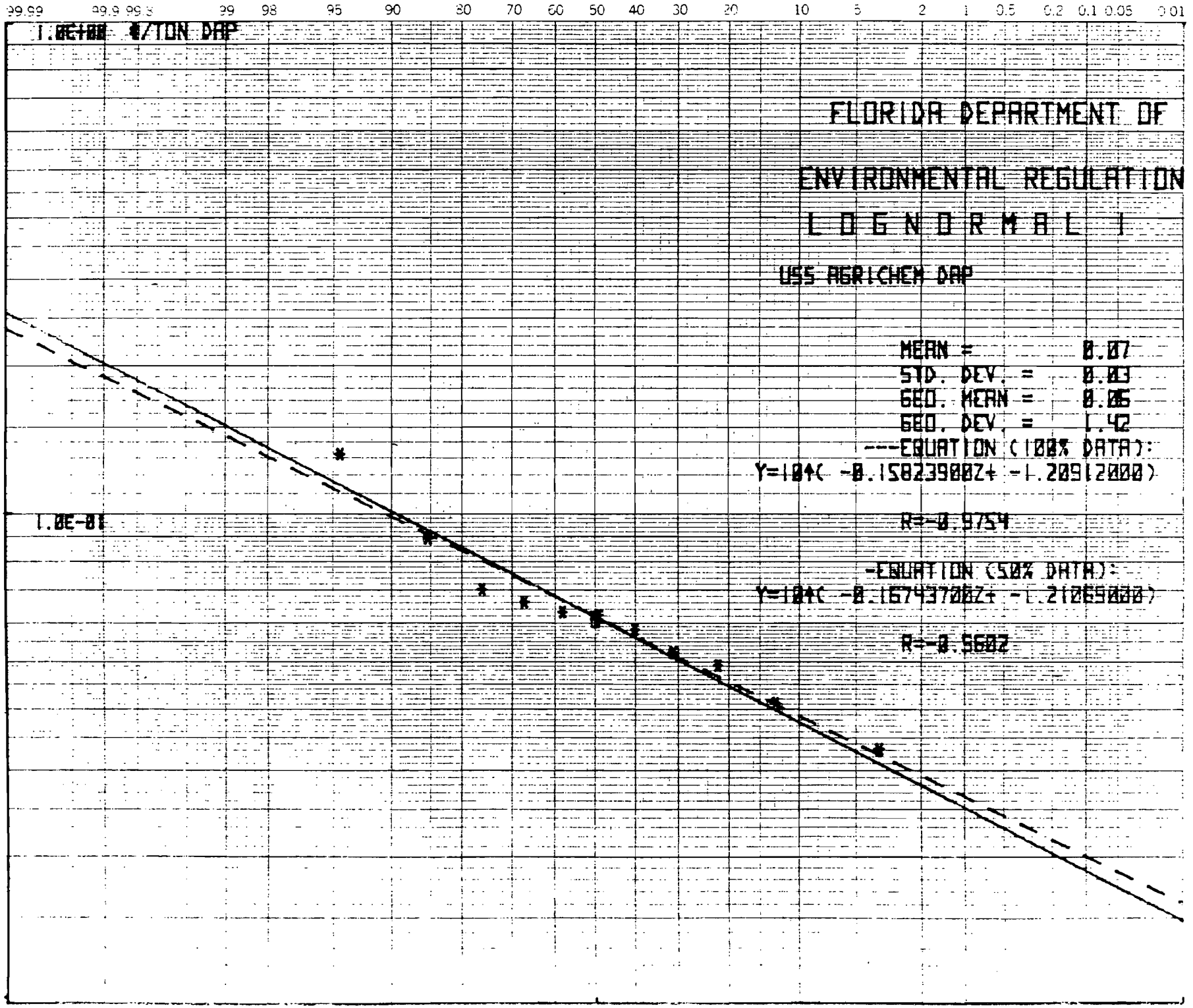
SUMMARY OF DATA FROM APPLICATIONS TO CONSTRUCT DAP PLANTS

Plant	Prod.-TPH P_2O_5	Prod.-TPH DAP	Control Equip.	Reported Cost $10^6	DSCFM	Particulate Emission Grains/DSCF	Particulate Emission lbs./hr.	Particulate Emission lbs./TDAP	Sulfur Dioxide Emissions Grains/DSCF	Sulfur Dioxide Emissions lbs./hr.	Sulfur Dioxide Emissions lbs./TDAP
W. R. Grace	39	80	Cyclones 3-Venturi Scrubbers 2-Tailgas Scrubbers	2.3	133,274	0.0324	37	0.463	0.022	25	0.31
Gardinier	22.52	50	Cyclones 3-Venturi Scrubbers 2-Tailgas Scrubbers	1.4	83,587	0.014	10	0.20	0.014	10	0.20
New Wales Process Equip			Cyclones 4-Venturi Scrubbers 2-Tailgas Scrubbers		186,464	0.02	32.0				
Cooler			1-bag Coll. System		51,706	0.01	4.43				
Total	70	140		6			36.43	0.26	0.022	44	0.314
USS Agri-Chemical (Permitted) 1975	33.4	72	Cyclones 3-Venturi Scrubbers 1-Tailgas Scrubber	3.4 (EST)	100,320	0.0393	33.8	0.469	-	-	-

DIAMMONIUMPHOSPHATE DEPT - EMISSION TEST RESULTS - CARD 12

STATION	DATE	DAP TON/HR	P2O5 TPD	ACFM X1000	SCFM X1000	TEMP DEG F	MOIST %	NH3 LB/TN	PARTICULATE EMISSIONS GRAINS /SCF	PARTICULATE EMISSIONS LB/TON	PARTICULATE EMISSIONS LB/DAY	FLUORINE EMISSIONS MG/SCF	FLUORINE EMISSIONS LB/TON P2O5	FLUORINE EMISSIONS LB/DAY	COMMENT
		~~65.00~~	~~718~~	~~118.6~~	~~105.1~~	~~90~~	~~8.05~~								
		~~65.00~~	~~718~~	~~116.9~~	~~103.6~~	~~90~~	~~8.04~~								
BEF08A	01-07-77	65.00	718	118.6	105.1	90	8.05	0.0616							
BEF08B	01-07-77	65.00	718	116.9	103.6	90	8.04		0.0045	0.062		0.0195	0.0083	6.41	
		~~68.00~~	~~751~~	~~118.1~~	~~99.4~~	~~90~~	~~6.33~~								
		~~68.00~~	~~751~~	~~111.0~~	~~100.8~~	~~90~~	~~5.80~~								
BEF08A	01-12-77	68.00	751	110.1	99.4	90	6.33	0.0592							
BEF08B	01-12-77	68.00	751	111.0	100.8	90	5.80		0.0055	0.070		0.0028	0.0012	0.89	
BEF08 A	01-18-77	60.00	662	95.8	91.1	80	3.06	0.0252							
BEF08 B	01-18-77	60.00	662	96.8	90.3	80	5.04		0.0032	0.041		0.0039	0.0004	1.10	
BEF08	03-02-78	94.	1038	112.7	98.0	98	9.42	0.0043							
BEF08	03-02-78	94.	1038	107.7	93.8	98	8.35	0.0042							
BEF08	03-04-78	85.	938	114.0	102.5	88	6.00	0.0042	0.0047	0.049		0.0005	0.0001	0.13	
BEF08	03-04-78	85.	938	111.9	100.6	88	7.11	0.0043	0.0050	0.052		0.0004	0.0001	0.13	
BEF08 A	09-13-78	85.00	938	119.8	90.7	120	16.00		0.0097	0.089		0.0144	0.0043	4.00	
BEF08 B	09-13-78	85.00	938	119.2	92.6	128	13.84		0.0035	0.033		0.0295	0.0090	8.41	
BEF08 A	09-14-78	85.00	938	116.2	82.8	133	20.25	0.0144							
BEF08 B	09-14-78	85.00	938	114.8	83.9	133	18.25	0.0116							
BEF08 A	10-07-78	82.00	905	117.4	99.4	92	11.83	0.0252							
BEF08 B	10-07-78	82.00	905	117.0	95.9	97	13.92	0.0204							
BEF08	05-03-79	90.00	994	117.9	94.7	113	13.16		0.0072	0.063		0.1430	0.0042	4.18	
BEF08	05-03-79	90.00	994	119.2	97.9	112	11.56		0.0062	0.058		0.0167	0.0053	5.23	
BEF08A	08-14-79	90.00	994	112.4	94.0	110	10.06	0.0160							
BEF08B	08-14-79	90.00	994	112.4	92.7	110	11.29	0.0197							
BEF08A	01-17-80	70.00	772	123.7	106.0	100	9.49		0.0102	0.132					
BEF08B	01-17-80														
BEF08C	01-17-80														
BEF08D	01-17-80														
BEF08E	01-17-80	70.00	772	123.1	105.7	100	9.29		0.0051	0.066					PARTICULATE
BEF08F	01-17-80	70.00	772	120.6	103.5	100	9.29					0.0040	0.0017	1.31	FLUORINE
BEF08G	01-17-80	70.00	772	121.2	103.8	100	9.49					0.0052	0.0022	1.71	FLUORINE
BEF08A	01-18-80	96.00	1060	111.8	98.3	95	7.92	0.1353							
BEF08B	01-18-80	96.00	1060	111.3	97.1	95	8.66	0.1211							
BEF08A	01-19-80														SULFUR DIOX
BEF08B	01-19-80														EMISSIONS
BEF08C	01-19-80														LB/TON-DAP
BEF08D	01-19-80	90.00	994	115.8	101.6	94	8.26								0.057 LB/TN
BEF08E	01-19-80	90.00	994	116.1	101.6	94	8.51								0.057 LB/TN


1.0E+00
X10^-01 GRAINS/DSCFM
1.0E-01
FLORIDA DEPARTMENT OF
ENVIRONMENTAL REGULATION
L O G N O R M A L 1
USS AGRICHEM DAP
MEAN = 0.06
STD. DEV. = 0.02
GEO. MEAN = 0.06
GEO. DEV. = 1.42
---EQUATION (100% DATA):
Y=10^(-0.15785320Z+ -1.25102000)
R=-0.9764
-EQUATION (50% DATA):
Y=10^(-0.17875000Z+ -1.24777000)
R=-0.9766


99.99 99.9 99.8 99 98 95 90 80 70 60 50 40 30 20 10 5 2 1 0.5 0.2 0.1 0.05 0.01
1.0E+00 $/TON DAP
1.0E-01
FLORIDA DEPARTMENT OF
ENVIRONMENTAL REGULATION
L O G N O R M A L I
USS AGRICHEM DAP
MEAN = 0.07
STD. DEV. = 0.03
GEO. MEAN = 0.06
GEO. DEV. = 1.42
---EQUATION (100% DATA):
Y=10^(-0.1582390027 + -1.209120007)
R=-0.9754
-EQUATION (50% DATA):
Y=10^(-0.1674370027 + -1.210690007)
R=-0.5602

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: Victoria Martinez, BACT Coordinator

THRU: Bill Thomas

FROM: Willard Hanks

DATE: February 18, 1980

SUBJ: BACT Determination - Diammonium Phosphate Plants W.R. Grace & Co./Gardinier, Inc./New Wales Chemical Company

The three subject companies have submitted applications for permits to construct diammonium phosphate plants (DAP) in Central Florida. I request a committee be established to determine BACT for DAP plants.

A summary of data from the applications for the three companies is attached. Also included is data from an existing DAP plant owned by USS Agri-chemicals Company.

Some miscellaneous comment about these applications are:

1. All applicants have referred to USS Agri-Chemicals DAP plant as the best controlled plant in existance now.

2. USS Agri-Chemicals has measured particulate and fluoride emission from their DAP plant on a number of occasions. A summary of their test results is attached.

3. USS Agri-Chemicals actual particulate emission is less than the allowable emission.

4. W. R. Grace is requesting to be permitted at the particulate emission level allowed for the USS Agri-Chemical DAP plant.

5. New Wales Chemical Company provided the most data in the BACT section of the application. This company plans to use a bag collector on some process/conveying equipment that other applicants plan to control with scrubbers.

6. Gardinier, Inc. has listed the lowest emissions for the DAP plant in their application but indicate they are estimates.

7. New Wales Chemical Company has done more tests for sulfur dioxide emissions from DAP plants than the other companies.

8. All components proposed NSPS for fluoride emissions.

Regulations require a separate BACT evaluation for each application. Please establish a BACT committee to evaluate each application and submit a recommendation, along with the basis for the proposed standard, for each DAP plant by March 10, 1980.

WH:caa

Attachment

BEST AVAILABLE COPY

SUMMARY OF DATA FROM APPLICATIONS TO CONSTRUCT DAP PLANTS

Plant	Prod.-TPH P_2O_5	Prod.-TPH DAP	Control Equip.	Reported Cost $10^6	DSCFM	Particulate Emission Grains/DSCF	Particulate Emission lbs./hr.	Particulate Emission lbs./TDAP	Sulf Grai DSCF
W. R. Grace	69	80	Cyclones 3-Venturi Scrubbers 2-Tailgas Scrubbers	2.3	133,274	0.0324	37	0.463	0.02
Gardinier	22.52	50	Cyclones 3-Venturi Scrubbers 2-Tailgas Scrubbers	1.4	83,587	0.014	10	0.20	0.01
New Wales Process Equip			Cyclones 4-Venturi Scrubbers 2-Tailgas Scrubbers		186,464	0.02	32.0		
Cooler			1-bag Coll. System		51,706	0.01	4.43		
Total	70	140		6			36.43	0.26	0.02
USS Agri-Chemical (Permitted) 1975	33.4	72	Cyclones 3-Venturi Scrubbers 1-Tailgas Scrubber	3.4 (EST)	100,320	0.0393	33.8	0.469	-

Best Available Copy

U S S A U K I -

STATION	DATE	DAP TON/HR	P2O5 TPD	ACFM X1000	SCFM X1000	TEMP DEG F	DIAMMONIUM PHOSPHATE %
~~BEF08A~~		~~65.00~~	~~718~~	~~118.6~~	~~105.1~~	~~90~~	~~8.05~~
~~BEF08B~~		~~65.00~~	~~718~~	~~116.9~~	~~103.6~~	~~90~~	~~8.04~~
BEF08A	01-07-77	65.00	718	118.6	105.1	90	8.05
BEF08B	01-07-77	65.00	718	116.9	103.6	90	8.04
~~BEF08A~~		~~68.00~~	~~751~~	~~110.1~~	~~99.4~~	~~90~~	~~6.33~~
~~BEF08B~~		~~68.00~~	~~751~~	~~111.0~~	~~100.8~~	~~90~~	~~5.80~~
BEF08A	01-12-77	68.00	751	110.1	99.4	90	6.33
BEF08B	01-12-77	68.00	751	111.0	100.8	90	5.80
BEF08 A	01-18-77	60.00	662	95.8	91.1	80	3.06
BEF08 B	01-18-77	60.00	662	96.8	90.3	80	5.04
BEF08	03-02-78	94.	1038	112.7	98.0	98	7.42
BEF08	03-02-78	94.	1038	107.7	93.8	96	8.35
BEF08	03-04-78	85.	938	114.0	102.5	88	8.00
BEF08	03-04-78	85.	938	111.9	100.6	88	7.71
BEF08 A	09-13-78	85.00	938	116.6	90.7	128	16.00
BEF08 B	09-13-78	85.00	938	119.2	92.6	128	15.84
BEF08 A	09-14-78	85.00	938	116.2	82.9	133	20.25
BEF08 B	09-14-78	85.00	938	114.5	83.9	133	19.23
BEF08 A	10-07-78	82.00	905	117.4	99.4	92	11.68
BEF08 B	10-07-78	82.00	905	117.3	95.9	97	13.92
BEF08	05-03-79	90.00	994	117.9	94.7	113	13.15
BEF08	05-03-79	90.00	994	116.2	97.9	112	11.36
BEF08A	06-14-79	90.00	994	112.4	96.0	110	10.06
BEF08B	06-14-79	90.00	994	112.4	92.7	110	11.29
BEF08A	01-17-80	70.00	772	123.7	106.0	100	9.49
BEF08B	01-17-80						
BEF08C	01-17-80						
BEF08D	01-17-80						
BEF08E	01-17-80	70.00	772	123.1	105.7	100	9.29
BEF08F	01-17-80	70.00	772	120.6	103.5	100	9.29
BEF08G	01-17-80	70.00	772	121.2	103.8	100	9.49
BEF08A	01-18-80	96.00	1060	111.8	98.3	95	7.92
BEF08B	01-18-80	96.00	1060	111.3	97.1	95	8.06
BEF08A	01-19-80						
BEF08B	01-19-80						
BEF08C	01-19-80						
BEF08D	01-19-80	90.00	994	115.8	101.6	94	8.26
BEF08E	01-19-80	90.00	994	116.1	101.6	94	8.51

SHOLTES & KOOGLER, ENVIRONMENTAL CONSULTANTS
1213 N.W. 6th Street Gainesville, Florida 32601 (904) 377-5822

FEB 1980
RECEIVED
BUREAU
AQM

SKEC 124-79-01
SKEC 203-78-01
SKEC 261-79-03

February 20, 1980

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

Subject: BACT for Diammonium Phosphate Fertilizer Plants

Dear Willard:

I appreciated the opportunity to talk with you today regarding BACT for particulate matter emissions from diammonium phosphate (DAP) fertilizer plants. I appreciate the responsibility you have for establishing BACT for these sources; however, I would like to state a reservation about how the matter is being pursued.

It is my understanding that you have received particulate matter emission data from the USSAC DAP plant in Bartow. I further understand that these data were collected over the past three years and show particulate matter concentrations in the tail gas in the range of 0.01 grains per standard cubic foot. I must admit that I am not familiar with the USSAC DAP plant nor the source of their scrubber water.

I would like to state my reservations; however, about proceeding on a BACT determination with emission data from only the one source. As has been stated in various documentation submitted to your office, the control of particulate matter from DAP plants is a rather complex matter. The scrubber systems on DAP plants are specifically designed to control ammonia and fluoride emissions. The control of particulate matter occurs as a result of controlling these two gases. It should also be remembered that fluoride emissions from a DAP plant vary (generally increase) with increasing plant operating time. This variation in emission rates is primarily due to the gradual plugging of the tail gas scrubber as a result of reactions occurring between the tail gas and scrubber water. When plugging proceeds to the point where conditions dictate, the DAP plant is shut down and the scrubber cleaned. This occurs approximately once every six months.

The degree to which the tail gas scrubbers plug and hence, the degree to which particulate matter emissions are effected, is dependent upon the characteristics of the pond water, the operating practices at the plant, and the specific design characteristics of the scrubber. Since these three factors differ from plant to plant, I feel it is quite risky to establish BACT based on particulate matter emissions from one DAP plant.

As I discussed with you, I am in the process of compiling particulate matter emission data from as many DAP plants as I can. Generally I am trying to obtain data from fairly new plants which are representative of plants which might now be constructed. I will forward this information for your review as soon as it is available; hopefully by early next week.

I appreciate your willingness to discuss this matter with me and hope the information I forward to you will assist you in your determination. If I can be of any further assistance, please feel free to call me.

Very truly yours,

SHOLTES & KOOGLER
ENVIRONMENTAL CONSULTANTS

John B. Koogler, Ph.D., P.E.

JBK:sc

cc: Mr. Steve Smallwood
Mr. Walter Starnes
Mr. A. L. Girardin
Mr. Mike Altenberger
Mr. Ed Mayer

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: Dan Williams

FROM: Willard Hanks

DATE: February 22, 1980

SUBJ: BACT - DAP Plants

Confirming our February 22 conversation, BAQM would like to obtain from you a BACT recommendation with supporting data on what should be the allowable particulate, fluoride and sulfur dioxide emissions from the proposed DAP plants to be constructed by W. R. Grace, Gardinier and New Wales Chemicals. Please send whatever data and recommendations you have to BAQM by March 10, 1980.

WH:caa

ATTACHMENT

1

H6 - Rev 7/76

State of Florida

DEPARTMENT OF ENVIRONMENTAL REGULATION

INTEROFFICE MEMORANDUM

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

To: Pepe de Castro Loctn.: DER 501

To: _____ Loctn.: _____

To: _____ Loctn.: _____

From: _____ Date: _____

TO: Pepe F. de Castro, Tom Davis, Joe Griffith, Willard Hanks, Johnny Cole

FROM: Victoria Martinez, BACT Coordinator

DATE: February 22, 1980

SUBJECT: Best Available Control Technology Determination for Three Diamomum Phosphate (DAP) Plants: W. R. Grace, Gardenier and New Wales

Thank you for agreeing to participate in the BACT determination for the above referrenced plants. Your prompt reply by March 10, 1980 will be appreciated.

VM:jr

RECEIVED
FEB 25 1980
Dept. of Environmental Regulation
Bureau of Wastewater Management

SHOLTES & KOOGLER, ENVIRONMENTAL CONSULTANTS
1213 N.W. 6th Street Gainesville, Florida 32601 (904) 377-5822

FILE with New Wales BACT; No # Assigned in File List. Will [illegible] H. May know.

SKEC 124-79-01

March 3, 1980

Mr. Walter Starnes
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32301

Dear Walt:

On behalf of myself and Jerry Girardin, we would like to express our appreciation for the opportunity of meeting with you and your staff on February 28th to discuss Best Available Control Technology (BACT) for particulate matter emissions from diammonium phosphate fertilizer plants. I would like to provide a written record of the information we relayed to you during this meeting and an answer, to the best of my ability, to some of the questions that were raised.

I think the most important point that Jerry and I tried to get across was the fact that the particulate matter which we all are concerned about in the tail gas from a DAP plant is not particulate matter generated during the production of DAP, but particulate matter formed in the tail gas scrubber during the removal of gaseous fluoride. If the problem were as straightforward as scrubbing inert particulate matter with relatively clean scrubber water, don't think New Wales or any of the other companies presently proposing new DAP plants would have any reservation about agreeing to a particulate matter emission rate in the range of 0.01 grams/scf, dry for BACT.

With DAP plants; however, the particulate matter of concern is formed in the air pollution control system and is the result of many variables. These variables not only effect the quantity of particulate matter generated but also the size of the particles and the chemical composition of the particles. With this in mind it should be apparent why the industry is hesitant to commit to an emission standard that will control emissions generated through a process they cannot adequately control.

In general the particles are formed as the result of pH changes in the scrubbing system and the effect of these changes on the chemical equilibrium of the pond water used for scrubbing. The changes in pH are generally brought about by variations in the amount of ammonia breaking through the primary scrubber and reaching the tail gas scrubber. Under conditions of extremely low scrubber water pH there is evidence that the particle formed is an ammonium bi-fluoride particle. When greater amounts of ammonia enter the tail gas scrubber and the scrubbing water pH increases there is evidence that the particle formed is silicon dioxide. The latter is the result of the decreased solubility of silicon compounds in scrubber water resulting from an increase in pH.

The amount of ammonia reaching the tail gas scrubber is a function of plant operating conditions. Slight upsets in plant operating procedures and even normal fluctuation in plant operation procedures will effect the amount of ammonia passing through the primary scrubber and reaching the tail gas scrubber. Coupled with this variable is the effect that pond water (scrubber water) has on the formation of particles. The chemistry of the pond water systems and the effect of pH changes on these systems is quite complex. I personally do not profess to understand the subtleties of the system and doubt that there are many people, if any, who do. Nonetheless, these subtleties are a fact of life in the phosphate fertilizer industry and the characteristics of individual pond waters are something individual plant operators have to live with day in and day out.

With one DAP plant we discussed it is our understanding that essentially fresh water is used on a once-through basis for tail gas scrubbing. In this particulate case one of the major factors effecting particle generation in the tail gas scrubbing system is eliminated. More than likely this is the reason for the low particulate matter emission rate recorded in this particular case.

From strictly an air pollution point of view, it would be ideal if all companies could use clean water on a once-through basis in their scrubbing systems. In reality; however, this is not possible both because of limitations imposed by wastewater discharge permits and the extra demand it would place on the water resources in the area.

One of the questions raised during our discussion was the pressure drop across the tail gas scrubbers at the plants for which we submitted particulate matter emission data. I was able to determine that the tail gas pressure drop usually runs from 8 to 10 inches. This appears to be normal throughout the industry. I would like to point out; however, that the pressure drop across the tail gas scrubber is almost irrelevant in this case however since tail gas scrubbers were not designed to remove particulate matter. The tail gas scrubbers are designed to remove gaseous fluorides and the design criteria used in designing these scrubbers is the number of transfer units; not the scrubber pressure drop.

Another matter which was discussed was the size of the particles generated in the tail gas scrubber. I was not able to obtain any specific information on this matter. The particles; however, are fumes and fumes are generally defined to be in the size range of 0.01 to 1.0 microns. I feel this size range is probably a reasonable estimate of particles generated in DAP plants based on the experience I had with one particular plant and related to you during our meeting.

Regarding the measurement of the size of these particles, I feel this would be quite difficult. I feel this way because the tail gases from the DAP plant are generally saturated and some of the particles or fumes in question are quite hydroscopic. If an attempt is made to sample these particles with a cascade impactor in the stack, even if the impactor is heated, the particles and the associated moisture will impact on a stage which will indicate a larger than actual particle size. Sampling the particles and then sizing outside the stack I feel would be virtually impossible because of problems that would be encountered with particle agglomeration.

For the record, I have attached hereto a copy of the particulate matter emission data for the four DAP plants that we provided during our meeting on February 28th. As I stated during our meeting, these data represent particulate matter emission rates from DAP plants constructed within the past five years. Plants A, C and D employ vertical tail gas scrubbers similar to the one proposed by New Wales. Plant B, the existing New Wales DAP plant, employs a cross flow packed tail gas scrubber.

Again, I would like to thank you and your staff for the opportunity to meet with you and we hope the information provided will be considered in your determination of Best Available Control Technology for particulate matter emissions from DAP plants. If you have any questions regarding the information we have submitted or if we can provide any additional information for you, please feel free to contact either of us.

Very truly yours,

SHOLTES & KOOGLER
ENVIRONMENTAL CONSULTANTS

John B. Koogler, Ph.D., P.E.

JBK:sc
Attachments

cc: Mr. Steve Smallwood
Mr. Bill Thomas
Mr. Willard Hanks
Mr. Mike Harley
Mr. J. F. DeCastro
Mr. A. L. Girardin

PARTICULATE MATTER EMISSIONS FROM DAP PLANTS

Plant	Production Rate (TPH)	Part. Emissions (lb/hr)		Part. Emissions (lb/ton DAP)		Part Concentration (gr/scf, dry)	
		RUN	TEST AVG	RUN	TEST AVG	RUN	TEST AVG
A	50	11.02		0.22		0.0142	
		8.07	9.67	0.16	0.19	0.0110	0.0132
		9.91		0.20		0.0144	
A	45	26.3		0.53		0.0346	
		22.8	24.2	0.46	0.49	0.0308	0.0326
		23.5		0.47		0.0323	
A	41	21.0		0.42		0.0296	
		26.9	19.7	0.54	0.40	0.0375	0.0275
		11.3		0.23		0.0154	
A	38	10.9		0.22		0.0154	
		12.0	9.2	0.24	0.19	0.0169	0.0130
		4.8		0.10		0.0066	
A	45	2.7		0.05		0.0035	
		9.9	5.0	0.20	0.10	0.0128	0.0065
		2.5		0.05		0.0032	
A	48	11.4		0.23		0.0164	
		10.5	9.0	0.21	0.18	0.0148	0.0130
		5.0		0.11		0.0078	
A	40	22.7		0.45		0.0304	
		21.4	20.9	0.43	0.42	0.0286	0.0280
		18.5		0.37		0.0250	
A	41	10.7		0.21		0.0161	
		14.4	12.6	0.29	0.23	0.0205	0.0166
		8.8		0.18		0.0131	
A	41	11.6		0.23		0.0171	
		18.5	13.6	0.37	0.27	0.0298	0.0212
		10.8		0.22		0.0167	
A	44	10.7		0.21		0.0138	
		8.3	10.1	0.17	0.20	0.0107	0.0130
		11.3		0.23		0.0145	

42.381 50 SHEETS 5 SQUARE
42.382 100 SHEETS 5 SQUARE
42.389 200 SHEETS 5 SQUARE
NATIONAL

PARTICULATE MATTER EMISSIONS FROM DAP PLANTS

Plant	Production Rate (TPH)	Part. Emissions (lb/hr)		Part. Emissions (lb/ton DAP)		Part Concentration (gr/scf, dry)	
		RUN	TEST AVG	RUN	TEST AVG	RUN	TEST AVG
A	40	12.0 9.6 12.9	11.5	0.24 0.19 0.26	0.23	0.0176 0.0138 0.0189	0.0168
A AVG	43			n = 33 $\bar{x}$ = 0.26 σ = 0.13 CV = 49.3%	n = 11 $\bar{x}$ = 0.26 σ = 0.12 CV = 45.7%	n = 33 $\bar{x}$ = 0.0183 σ = 0.0089 CV = 48.7%	n = 11 $\bar{x}$ = 0.0183 σ = 0.0080 CV = 43.9%
B	87	19.6 7.6 16.2	14.5	0.22 0.09 0.19	0.17	0.024 0.009 0.022	0.018
	87	34.1 30.8	32.5	0.39 0.35	0.37	0.042 0.039	0.041
	84	6.8 10.8	8.8	0.08 0.13	0.11	0.010 0.015	0.012
	84	27.3 18.2	22.8	0.33 0.22	0.27	0.034 0.023	0.029
	87	15.8 36.9	26.1	0.18 0.42	0.30	0.018 0.041	0.030
	87	17.8 38.7	28.2	0.21 0.44	0.33	0.019 0.044	0.030
	78	13.5 12.0 10.2	11.9	0.17 0.15 0.13	0.15	0.018 0.016 0.014	0.016
	-	32.1	32.1	-	-	0.037	0.037
	93	26.0	26.0	0.28	0.28	0.028	0.028
	90	14.5 12.4	13.4	0.16 0.14	0.15	0.019 0.016	0.018
	86			n = 19 $\bar{x}$ = 0.23 σ = 0.11 CV = 49.7%		n = 20 $\bar{x}$ = 0.024 σ = 0.011 CV = 45.8%	n = 10 $\bar{x}$ = 0.024 σ = 0.009 CV = 36.7%

42-381 50 SHEETS 5 SQUARE
42-382 100 SHEETS 5 SQUARE
42-389 200 SHEETS 5 SQUARE
NATIONAL

PARTICULATE MATTER EMISSIONS FROM DAP PLANTS

Plant	Production Rate (TPH)	Part. Emissions (lb/hr)		Part. Emissions (lb/ton DAP)		Part Concentration (gr/scf, dry)	
		RUN	TEST AVG	RUN	TEST AVG	RUN	TEST AVG
C	46		6.3		0.14		0.0082
	54		15.0		0.28		0.0207
	44		10.1		0.23		0.0145
	18		5.9		0.33		0.0094
	52		7.0		0.13		0.0107
	42		8.6		0.20		0.0109
	43				$n = 6$ $\bar{x} = 0.22$ $\sigma = 0.078$ $cv = 35.9\%$		$n = 6$ $\bar{x} = 0.0124$ $\sigma = 0.0046$ $cv = 37.0\%$
D	65	4.0		0.062		0.0045	
	68	4.2	3.6	0.070	0.058	0.0055	0.0044
	60	2.5		0.041		0.0032	
	85	4.2	4.3	0.049	0.050	0.0047	0.0049
	85	4.4		0.052		0.0050	
	85	7.6	5.2	0.089	0.061	0.0097	0.0066
	85	2.8		0.033		0.0035	
	90	5.7	5.4	0.063	0.061	0.0072	0.0067
	90	5.2		0.058		0.0062	
	70	9.2	6.9	0.132	0.099	0.0102	0.0076
	70	4.6		0.066		0.0051	
				$n = 11$ $\bar{x} = 0.065$ $\sigma = 0.027$ $cv = 41.2\%$	$n = 5$ $\bar{x} = 0.065$ $\sigma = 0.019$ $cv = 29.0\%$	$n = 11$ $\bar{x} = 0.0059$ $\sigma = 0.0023$ $cv = 39.0\%$	$n = 5$ $\bar{x} = 0.0059$ $\sigma = 0.0013$ $cv = 22.2\%$

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

INTEROFFICE MEMORANDUM

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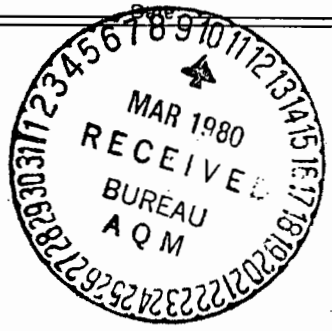
To: _____ Loctn.: _____
From: _____ Date: _____



TO: Victoria Martinez/Willard Hanks

THRU: Dan Williams DW

FROM: Bob Garrett RRG

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

Fl: DAP Plant Garrett

THOMAS L. CRAIG

Vice President &
General Manager

D.E.R.

FEB 12 1980

SOUTHWEST DISTRICT
TAMPA

New Wales Chemicals, Inc.

A SUBSIDIARY OF INTERNATIONAL MINERALS & CHEMICAL CORPORATION

February 8, 1980

Mr. R. R. Garrett, P.E.
Department of Environmental Regulation
7601 Highway 301 N
Tampa, Florida 33610

Dear Mr. Garrett:

As previously discussed with you and Mr. Williams, New Wales has undertaken extensive modifications to our DAP plant tail-gas scrubber. Most of the modifications were complete when your stack sampling team tested this plant for fluoride emissions. These modifications included the following:

a. Exhaust gases from the reactor are now being ducted through a venturi scrubber to a Teller nucleator. These gases are primarily aerosol ammonium bifluoride and the nucleator causes a particle size enlargement. The large particle which is created is then removed by passage through tellerettes and a Munters mist eliminator.

b. Exhaust gases from the dryer and cooler in the plant contain primarily silicon tetrafluoride and DAP dust. These contaminants are removed by passing then through cyclones for dust removal, venturis for micron size dust removal and the small amount of ammonia from these areas, and finally to a tailgas scrubber for removal of the $SiF4^{=}$.

c. The slurry header in the granulator has been repositioned to allow more efficient contact in the reactor with the ammonia. The off gases are then passed to a venturi where unreacted ammonia is removed and the remaining stream which is predominately $SiF4^{=}$ combines with the gas stream from the dryer/cooler stream and passes into the tailgas scrubber. Once the gases enter the tailgas scrubber they are cooled with preconditioning sprays and then passed through a wet packed section, a dry packed section and finally a Kimre mist elimination system.

P. O. Box 1035 • Mulberry, Florida 33860 • Phone: (813) 428-2531

These modifications are what has been performed to date and approximately $725,000 has been expended.

We have not made a final decision on whether or not to utilize a bag collector off of the cooler. This would decrease the airflow to the tailgas scrubber but at this time we do not know if it will be necessary. As soon as we make this decision, as we hope to make shortly, we will discuss this matter with you and attempt to explain our position.

Additional ponding does not seem to be necessary for operation of the scrubber and we will certainly discuss our reasons for coming to this conclusion with you.

At this time the test performed by your stack team and several tests performed since that time by New Wales personnel, indicate that our DAP plant scrubber is generally performing its designed task. We are occasionally still seeing borderline fluoride emissions and we are continuing to look closely at our DAP scrubber operations and make every necessary improvement.

It is the intention of New Wales to conform to all applicable regulations. Therefore, as I have indicated earlier, we intend to work closely with your office and we will certainly keep you notified as to our progress.

I hope this reply will answer questions as put forth in your letter of November 20, 1979.

Sincerely,

Thomas L Gaines

TLC:dma

CF INDS - No 9 DAP

ATTACHMENT B-2

Product Weight:

$$\frac{72{,}726 \text{ Lbs. } P_2O_5/\text{Hr.}}{0.465 \ (\% \ P_2O_5)} \times \frac{0.95 \text{ (Recovery)}}{2{,}000 \text{ Lbs./Ton}} = 74.3 \text{ Tons/Hour}$$

DAP Production (estimated maximum rate):

Dryer discharge elevator is believed to be the limiting factor. Capacity = 375 tons/hour with 100% bucket loading.

Normal operation requires four tons recycle per ton of product. However, a 3.5/1 ratio may be possible, therefore, the following represents a maximum production rate:

Let P = Tons Product/Hour

$P + 3.5\ P = 375$ Tons/Hour

$P = 83$ Tons/Hour (production rate)

AFI Production (1976 Data):

Acid Input = 25.2 Tons P_2O_5/Hour = 44.2 Tons Acid/Hour

Limestone Input =

$$1.26 \frac{\text{Ton Limestone}}{\text{Ton } P_2O_5} \times 25.2 \text{ Tons } P_2O_5/\text{Hour} = 31.8 \text{ Tons}$$

Recycle:

$$\frac{2 \text{ Tons Recycle}}{.454 \text{ Tons } P_2O_5} \times 25.2 \frac{\text{Tons } P_2O_5}{\text{Hour}} = 110.0 \text{ Tons/Hour}$$

187.0 Tons/Hour

Allowable Emissions:

$$E = 17.31 \times 187^{0.16} = 39.98 \text{ Pounds/Hour}$$

Product Rate:

$$\frac{25.2 \text{ Tons } P_2O_5/\text{Hr.}}{.454 \text{ Tons } P_2O_5/\text{Ton Product}} = 55.5 \text{ Tons Product/Hour}$$

ATTACHMENT B

PROCESS WEIGHT AND ALLOWABLE DISCHARGE CALCULATIONS

DAP Production (at time of stack sample):

Slurry rate = 230 GPM

Input P_2O_5 =

230 Gallons/Minute X 5.27 P_2O_5/Gallons Slurry X 60 Minutes/Hour

= 72,726 Pounds P_2O_5/Hour

Weak Acid Input =

$$\frac{72{,}726 \text{ Lbs. } P_2O_5/\text{Hr.}}{.28 \ (\% \ P_2O_5)} \times \frac{0.3 \ (\% \text{ Total } P_2O_5)}{2{,}000 \text{ Lbs./Ton}} = 39.0 \text{ Tons/Hour}$$

Strong Acid Input =

$$\frac{72{,}726 \text{ Lbs. } P_2O_5/\text{Hr.}}{.53 \ (\% \ P_2O_5)} \times \frac{0.7 \ (\% \text{ Total } P_2O_5)}{2{,}000 \text{ Lbs./Ton}} = 48.0 \text{ Tons/Hour}$$

Ammonia Input =

$$\frac{72{,}726 \text{ Lbs. } P_2O_5/\text{Hr.}}{2{,}000 \text{ Lbs./Ton}} \times \frac{0.22 \ NH_3}{0.465 \ P_2O_5} = 17.2 \text{ Tons/Hour}$$

Recycle:

$$\frac{4 \text{ Recycle}}{1 \text{ Product}} \times \frac{72{,}726 \text{ Lbs. } P_2O_5/\text{Hr.}}{0.465 \ (\% \ P_2O_5)} \times \frac{0.95 \text{ (Recovery)}}{2{,}000 \text{ Lbs./Ton}}$$

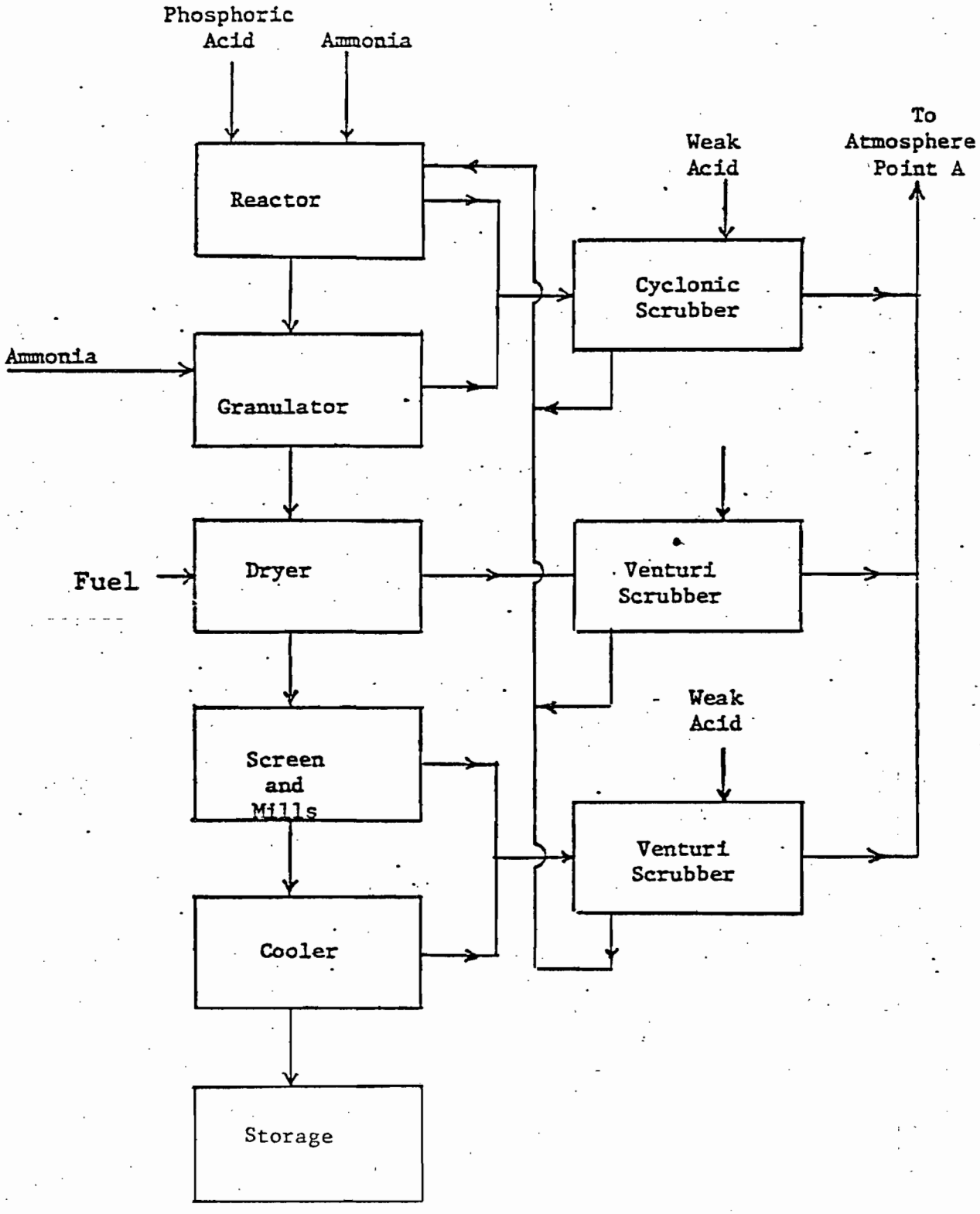
= 297 Tons/Hour

Total Process Input Rate = 401.2

Allowable Emissions:

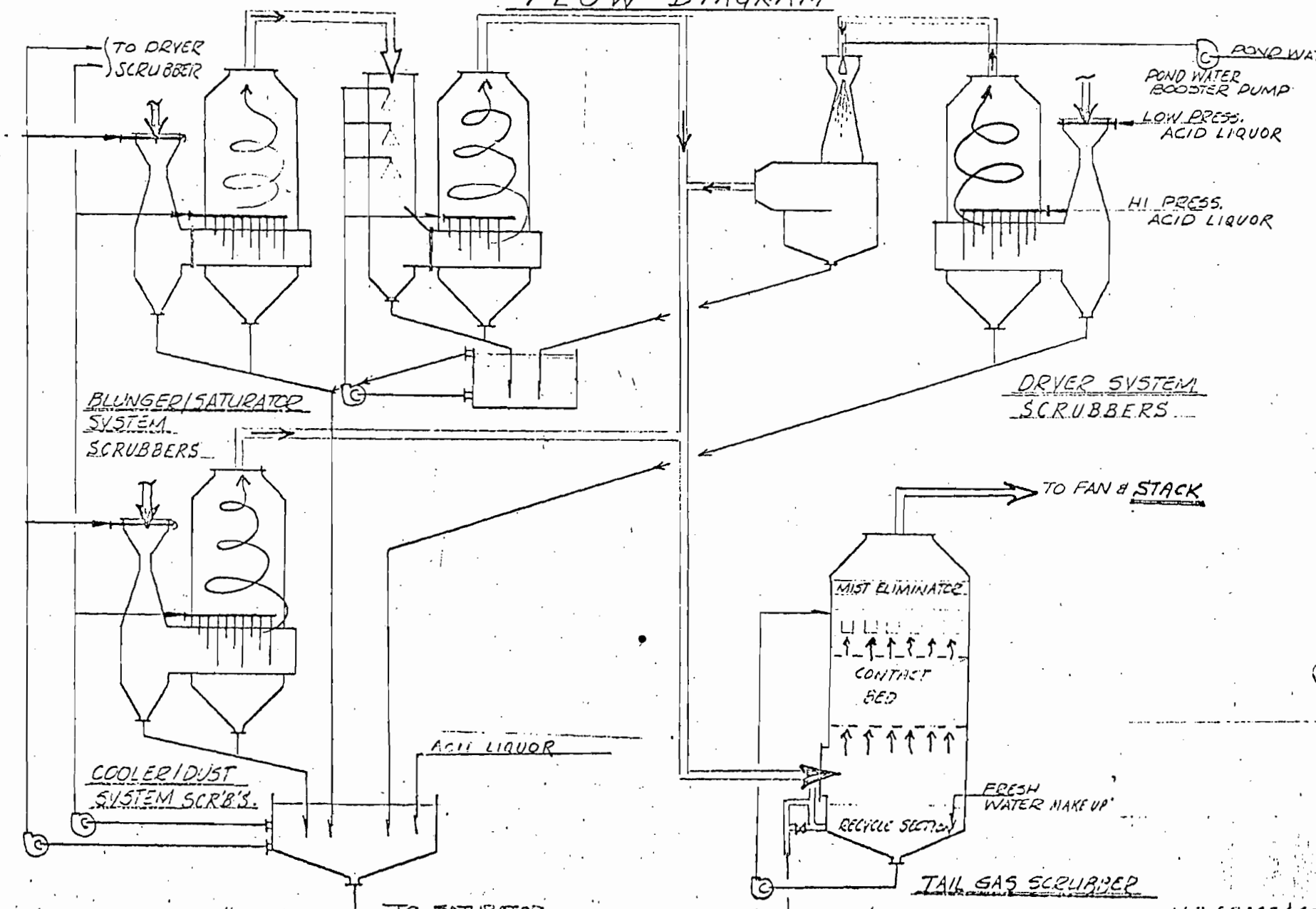
$E = 17.31 \times 401.2^{0.16} = 45.2$ Pounds/Hour

SKETCH 2A
CF CHEMICALS, INC.
DIAMMONIUM PHOSPHATE PLANT NO. 4
PRODUCING DIAMMONIUM PHOSPHATE



GRACE

FLOW DIAGRAM



W.R. GRACE & CO.
FERTILIZER PLANT
SK-1109-1 Rev. 3-

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

DISTRICT ROUTING SLIP

TO: Dan Williams & Bob Harnett DATE: 2-22-83

____ PENSACOLA – NORTHWEST DISTRICT
____ PANAMA CITY – Northwest District Branch Office
____ TALLAHASSEE – Northwest District Branch Office
✓ TAMPA – SOUTHWEST DISTRICT
____ ORLANDO – ST. JOHNS RIVER DISTRICT
____ JACKSONVILLE – St. Johns River Subdistrict
____ GAINESVILLE – St. Johns River Subdistrict Branch Office
____ FORT MYERS – SOUTH FLORIDA DISTRICT
____ PUNTA GORDA – South Florida Branch Office
____ MARATHON – South Florida Branch Office
____ WEST PALM BEACH – South Florida Subdistrict
____ FORT PIERCE – South Florida Subdistrict Branch Office

COMMENTS: As discussed. If you get a request for the same from Vectron, ignore this. I'll try to stop her from sending you one to avoid duplication.

FROM: Linda TEL.: 278-1344

REV. JUL 77

State of Florida

DEPARTMENT OF ENVIRONMENTAL REGULATION

INTEROFFICE MEMORANDUM

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

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To: _____ Loctn.: _____

To: _____ Loctn.: _____

From: _____ Date: _____

D.E.R.

FEB 27 1980

SOUTHWEST DISTRICT
TAMPA

TO: Dan Williams

FROM: Willard Hanks

DATE: February 22, 1980

SUBJ: BACT - DAP Plants

Confirming our February 22 conversation, BAQM would like to obtain from you a BACT recommendation with supporting data on what should be the allowable particulate, fluoride and sulfur dioxide emissions from the proposed DAP plants to be constructed by W. R. Grace, Gardinier and New Wales Chemicals. Please send whatever data and recommendations you have to BAQM by March 10, 1980.

WH:caa

ATTACHMENT

SUMMARY OF DATA FROM APPLICATIONS TO CONSTRUCT DAP PLANTS

Plant	Prod.-TPH P_2O_5	Prod.-TPH DAP	Control Equip.	Reported Cost $10^6	DSCFM	Particulate Emission Grains/DSCF	Particulate Emission lbs./hr.	Particulate Emission lbs./TDAP	Sulfur Dioxide Emissions Grains/DSCF	Sulfur Dioxide Emissions lbs./hr.	Sulfur Dioxide Emissions lbs./TDAP
W. R. Grace	39	80	Cyclones 3-Venturi Scrubbers 2-Tailgas Scrubbers	2.3	133,274	0.0324	37	0.463	0.022	25	0.31
Gardinier	22.52	50	Cyclones 3-Venturi Scrubbers 2-Tailgas Scrubbers	1.4	83,587	0.014	10	0.20	0.014	10	0.20
New Wales Process Equip			Cyclones 4-Venturi Scrubbers 2-Tailgas Scrubbers		186,464	0.02	32.0				
Cooler			1-bag Coll. System		51,706	0.01	4.43				
Total	70	140		6			36.43	0.26	0.022	44	0.314
USS Agri-Chemical (Permitted) 1975	33.4	72	Cyclones 3-Venturi Scrubbers 1-Tailgas Scrubber	3.4 (EST)	100,320	0.0393	33.8	0.469	-	-	-

.348 Avg

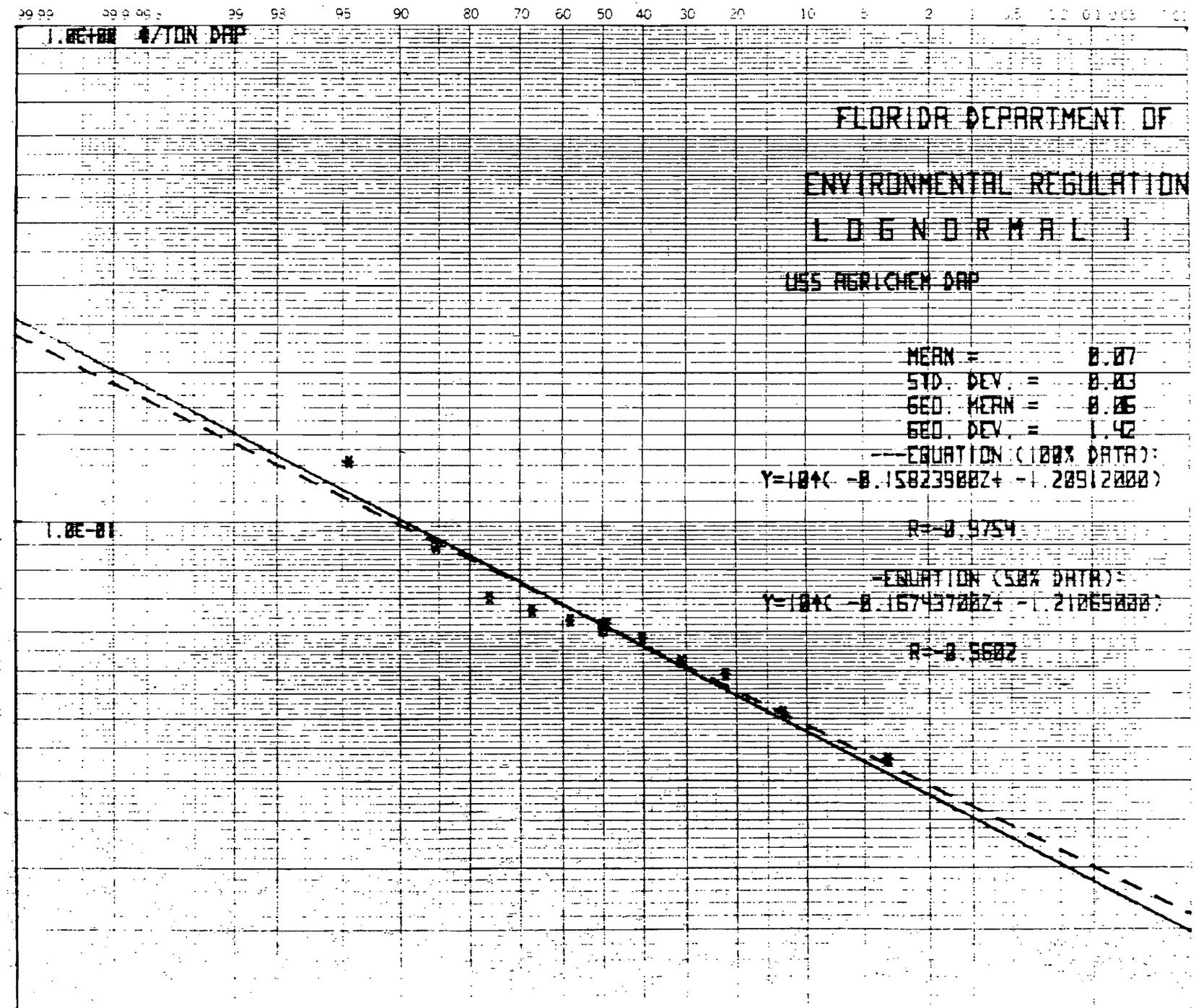
Permit near PWT

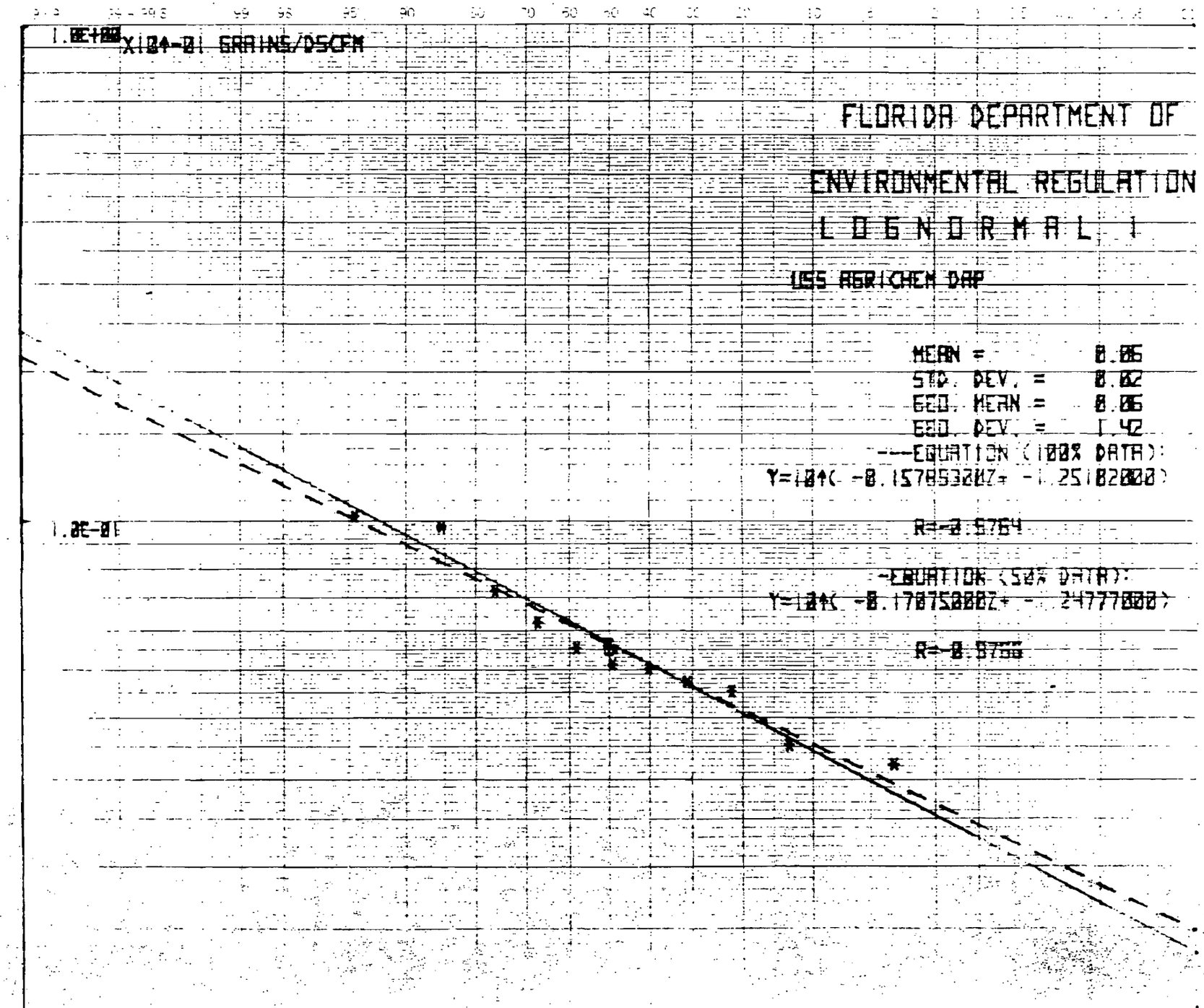
Best Available Copy

U S S A G R I - C H E M I C A L S 01/23/80 PAGE

DIAMMONIUM PHOSPHATE DEPT - EMISSION TEST RESULTS - CARD 12

STATION	DATE	DAP TON/HR	P2O5 TPD	ACFM X1000	SCFM X1000	TEMP DEG F	MOIST %	NH3 LB/TN	PARTICULATE EMISSIONS GRAINS /SCF	PARTICULATE EMISSIONS LB/TON	PARTICULATE EMISSIONS LB/DAY	FLUORINE EMISSIONS LB/TON MG/SCF	FLUORINE EMISSIONS LB/TON P2O5	FLUORINE EMISSIONS LB/DAY	COMMENT
		~~65.00~~	~~718~~	~~118.6~~	~~105.1~~	~~90~~	~~8.05~~								
		~~65.00~~	~~718~~	~~116.9~~	~~103.6~~	~~90~~	~~8.04~~								
BEF08A	01-07-77	65.00	718	118.6	105.1	90	8.05	0.0616							
BEF08B	01-07-77	65.00	718	116.9	103.6	90	8.04		0.0045	0.062		0.0195	0.0083	6.41	
		~~68.00~~	~~751~~	~~110.1~~	~~99.4~~	~~90~~	~~6.33~~								
		~~68.00~~	~~751~~	~~111.0~~	~~100.8~~	~~90~~	~~5.80~~								
BEF08A	01-12-77	68.00	751	110.1	99.4	90	6.33	0.0592							
BEF08B	01-12-77	68.00	751	111.0	100.8	90	5.80		0.0055	0.070		0.0028	0.0012	0.89	
BEF08 A	01-18-77	60.00	662	95.8	91.1	80	3.06	0.0252							
BEF08 B	01-18-77	60.00	662	96.8	90.3	80	5.04		0.0032	0.041		0.0039	0.0004	1.10	
BEF08	03-02-78	94.	1038	112.7	98.0	98	9.42	0.0043							
BEF08	03-02-78	94.	1038	107.7	93.8	96	8.35	0.0042							
BEF08	03-04-78	85.	938	114.0	102.5	88	6.00	0.0042	0.0047	0.049		0.0005	0.0001	0.13	
BEF08	03-04-78	85.	938	111.9	100.6	88	7.11	0.0043	0.0050	0.052		0.0004	0.0001	0.13	
BEF08 A	09-13-78	85.00	938	119.8	90.7	128	16.00		0.0047	0.089		0.0144	0.0043	4.00	
BEF08 B	09-13-78	85.00	938	119.2	92.6	128	13.84		0.0035	0.063		0.0295	0.0090	8.41	
BEF08 A	09-14-78	85.00	938	116.2	82.6	133	20.25	0.0144							
BEF08 B	09-14-78	85.00	938	114.8	83.9	133	18.25	0.0116							
BEF08 A	10-07-78	82.00	905	117.4	99.4	92	11.83	0.0252							
BEF08 B	10-07-78	82.00	905	117.0	95.9	97	13.92	0.0204							
BEF08	05-03-79	90.00	994	117.9	94.7	113	13.16		0.0072	0.063		0.1430	0.0042	4.18	
BEF08	05-03-79	90.00	994	119.2	97.9	112	11.56		0.0062	0.058		0.0167	0.0053	5.23	
BEF08A	08-14-79	90.00	994	112.4	94.0	110	10.06	0.0160							
BEF08B	08-14-79	90.00	994	112.4	92.7	110	11.29	0.0197							
BEF08A	01-17-80	70.00	772	123.7	106.0	100	9.49		0.0102	0.132					
BEF08B	01-17-80														
BEF08C	01-17-80														
BEF08D	01-17-80														
BEF08E	01-17-80	70.00	772	123.1	105.7	100	9.29		0.0051	0.066					PARTICULATE
BEF08F	01-17-80	70.00	772	120.6	103.5	100	9.29					0.0040	0.0017	1.31	FLUORINE
BEF08G	01-17-80	70.00	772	121.2	103.8	100	9.49					0.0052	0.0022	1.71	FLUORINE
BEF08A	01-18-80	96.00	1060	111.8	98.3	95	7.92	0.1353							
BEF08B	01-18-80	96.00	1060	111.3	97.1	95	8.66	0.1211							
BEF08A	01-19-80														SULFUR DIOX EMISSIONS
BEF08B	01-19-80														LB/TON-DAP
BEF08C	01-19-80														0.057 LB/TN
BEF08D	01-19-80	90.00	994	115.8	101.6	94	8.26								0.057 LB/TN
BEF08E	01-19-80	90.00	994	116.1	101.6	94	8.51								


99.99 99.9 99.8 99 98 95 90 80 70 60 50 40 30 20 10 5 2 1 .5 .2 .1 .05 .01
1.0E+00 $/TON DAP
1.0E-01
FLORIDA DEPARTMENT OF
ENVIRONMENTAL REGULATION
L O G N O R M A L 1
USS AGRICHEM DAP
MEAN = 0.07
STD. DEV. = 0.03
GEO. MEAN = 0.06
GEO. DEV. = 1.42
---EQUATION (100% DATA):
Y=10^(-0.158239002+ -1.2891200)
R=-0.9754
-EQUATION (50% DATA):
Y=10^(-0.167437002+ -1.2106500)
R=-0.5602


1.0E+00
X104-01 GRAINS/DSCFM
1.0E-01
FLORIDA DEPARTMENT OF
ENVIRONMENTAL REGULATION
L O G N O R M A L 1
USS AGRICHEM DAP
MEAN = 0.06
STD. DEV. = 0.02
GEO. MEAN = 0.06
GEO. DEV. = 1.42
---EQUATION (100% DATA):
Y=10^(-0.15785320Z+ -1.25102000)
R=-0.5764
-EQUATION (50% DATA):
Y=10^(-0.17875000Z+ -.24777000)
R=-0.8756

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: Victoria Martinez

THRU: Steve Smallwood
Philip R. Edwards PRE

FROM: Tom Davis TAD

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: Willard Hanks 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

State of Florida

DEPARTMENT OF ENVIRONMENTAL REGULATION

INTEROFFICE MEMORANDUM

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To:	Loctn.:
To:	Loctn.:
To:	Loctn.:
From:	Date:

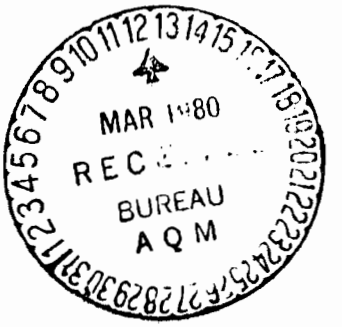
ST. JOHNS RIVER SUBDISTRICT, JACKSONVILLE

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 $<$ 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

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To: _____ Loctn.: _____
To: _____ Loctn.: _____
To: _____ Loctn.: _____
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 LIQUI
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

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.

Best Available Copy

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

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To:	Loctn.:
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To:	Loctn.:
From:	Date:

TO: Victoria Martinez

THRU: Steve Smallwood
Philip R. Edwards PRE

FROM: Tom Davis TRS

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.

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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
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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:

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

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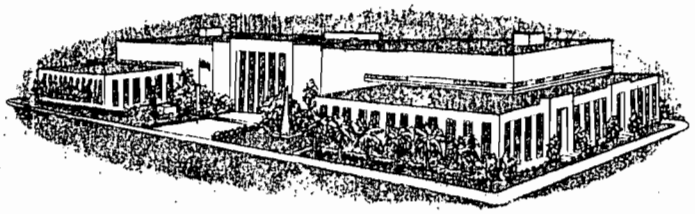
SUMMARIZING: Self-stack-sampling results as reported by DAP operation (USSAC) that have easy access to and employ once-through rain water from an old mine pit are not representative of fact-of-life performances and should not be used to set BACT limits, even for such operation (USSAC). At least monthly 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

RECEIVED
MAR 1980
BUREAU
AQM

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

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DEPARTMENT OF REGULATION

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To: _____ Loctn.: _____

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To: _____ Loctn.: _____

From: _____

RECEIVED MAR 1980 BUREAU AQM

TO: Victoria Martinez/Willard Hanks

THRU: Dan Williams DW

FROM: Bob Garrett RRG

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

State of Florida

DEPARTMENT OF ENVIRONMENTAL REGULATION

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To:	Loctn.:
To:	Loctn.:
To:	Loctn.:
From:	Date:

67

TO: Jacob D. Varn

FROM: Steve Smallwood

DATE: March 28, 1980

SUBJECT: BACT Determination - Diammonium Phosphate Plant, Gardinier Inc., Hillsborough County

Facility: A 50 ton per hour diammonium phosphate (DAP) plant. The plant will produce DAP fertilizer from anhydrous ammonia, phosphoric acid and sulfuric acid using a No. 6 oil fired dryer, screens, mills, cooler, reactor and granulator. Estimated potential emission of pollutants subject to the BACT rule are:

Particulate	2,110 tons/year

BACT Determination Requested by the Applicant:

Total Fluorides	0.06 lb. fluorides per ton of equivalent P_2O_5 Feed

Date of Receipt of a Complete BACT Application:

February 6, 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 and 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	0.43 (10 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/TDAP)

BACT Determination by Florida Department of Environmental Regulation:

Pollutant	Maximum Emission
Particulate	10 lb/hr and 0.5 lb/Ton of P_2O_5

Justification of DER Determination:

Particulate: The applicant's proposed design can meet the $\frac{0.5 \text{ lb}}{\text{Ton } P_2O_5 \text{ Feed}}$ and $\frac{10 \text{ lb}}{\text{hr}}$ emission limitation 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

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Recommendation from: Bureau of Air Quality Management

By: _____
Steve Smallwood

Date: _____

Approved by: _____
Jacob D. Varn

Date: _____

SS:jr
attachment

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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: Jake Varn

FROM: Steve Smallwood

DATE: March 28, 1980

SUBJECT: Best Available Control Technology (BACT) Determination
Diammonium Phosphate Plant, New Wales Chemicals, Inc.
Polk County

Facility: A 140 ton per hour diammonium phosphate (DAP) plant. The plant will produce DAP fertilizer from anhydrous ammonia, and phosphoric acid using No. 6 oil fired dryer, screens, mills, cooler, reactor and granulator. Estimated potential emission of pollutants subject to the BACT rule are:

Particulate	6,000	tons/year
Sulfur Dioxide	444	tons/year

BACT Determination Requested by the Applicant:

Pollutant	Maximum Allowable Emission
Fluorides	0.060 lbs/ton P_2O_5 Feed

Date of Receipt of a Complete BACT Application:

February 13, 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;
Robert Garrett, DER Southwest District, Tampa;
Willard Hanks, DER Bureau of Air Quality Management, Tallahassee;
Joseph Griffiths, Hillsborough County Pollution Control, Tampa;
Johnny Cole, DER St. Johns River Subdistrict, Jacksonville

Study Group Recommendations:

	Particulate #/Ton P_2O_5 Feed	Sulfur Dioxide #/Ton P_2O_5 Feed
Thomas Davis	0.50 (0.015 gr/scf)	0.70 (2.5% S in fuel)
Pepe de Castro	0.62 (0.02 gr/scf)	None given
Robert Garrett	0.33 (.15 lb/ton DAP)	None given
Joseph Griffiths	0.83 (0.03 gr/scf on scrubbers) (0.015 gr/scf on baghouse)	None given
Willard Hanks	0.43 (0.20 lbs/ton DAP)	0.65 (.3 lb/TDAP)

BACT Determination by the Florida Department of Environmental Regulation:

Pollutant	Maximum Emission lb/ton P_2O_5 Feed
Sulfur Dioxide	0.7
Particulate	

NOTE: Particulate emission proportioned to 3 stacks as follows:

Stack	Feed	Emissions	Equivalent
Common Cooler	65.1 TP_2O_5/Hr.	4.5 lbs/hr.	-
East Train	32.6 "	14.1 "	0.433 lbs/tonP_2O_5 Feed
West Train	32.6 "	14.1 "	0.433 "
Total for facilities		32.7 "	0.5 "

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Justification of DER Determination

Particulate Matter: The 0.5 lbs/ton P_2O_5 feed emission limitation selected is representative of Best Available Control Technology and can be met with the proposed design.

Sulfur Dioxide: On the basis of the information provided the 0.7 lb/ton P_2O_5 limit is attainable with the 2.5% S fuel proposed by the applicant.

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: _____
Steve Smallwood

Date: _____

Approved by: _____
Jacob D. Varn

Date: _____

SS:jr
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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

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

original typed on 100% recycled paper

Recommendation from: Bureau of Air Quality Management

By: _____
Steve Smallwood

Date: _____

Approved by: _____
Jacob D. Varn

Date: _____

SS:jr
attachment

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