

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES
4014 NW THIRTEENTH STREET
GAINESVILLE, FLORIDA 32609
904/377-5822 • FAX 377-7158

KA 124-93-01

July 30, 1993

RECEIVED
AUG 03 1993
Division of Air
Resources Management

Mr. C. H. Fancy
Florida Department of
Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Subject: Additional Information
IMC-Agrico Company, Nichols Plant
SAP/DAP Production Increase
Permit File No. AC53-230355 and PSD-FL-204

Dear Mr. Fancy:

This is in response to your letter dated May 26, 1993, requesting additional information on the above project. Please be advised that the name of the applicant has changed, as indicated above, as a result of a recent merger.

1. Submit an additional \$7500 permit application fee for the review of the Diammonium Phosphate (DAP) application. The fee of \$7500 that was submitted with the permit application will cover the Sulfuric Acid Plant and the Molten Sulfur System applications.

RESPONSE:

The additional \$7500 was submitted by IMC to FDEP on June 4, 1993.

2. Provide storage tank capacities, throughput rate increases, etc. of molten sulfur, sulfuric acid, DAP, and ammonia for the facility to handle increased production rates.

RESPONSE:

It is our understanding from discussion with Mr. Syed Arif, that the intent of this question was to identify the requirement of any additional storage tanks for the proposed project. IMC-Agrico has verified that no additional storage tanks will be required for the proposed project. However, the material throughput rates will increase proportionately to the production rate increases requested in the permit application package.

Please note that the existing plant is capable of the higher production rate as demonstrated by test data already submitted to FDEP (see Appendix B of the permit application package).

3. Provide the April, 1993, compliance test results of the actual emission rates of fluorides and particulates from the DAP plant. Also, provide the highest fluoride and particulate emissions that have been measured from each scrubber in the DAP plant during normal operations.

RESPONSE:

A summary of past compliance tests, including April 1993, for the emissions of fluorides and particulate matter from the DAP plant are presented in Attachment 1. The maximum projected emissions, quantified at the bottom of the table, reflect DAP plant total fluorides and particulate matter emission rates of 2.43 and 28.31 pound per hour, respectively. Based on this evaluation, it is requested that the allowable emission rates for fluorides and particulate matter reflect those presented in the permit application of 2.9 and 32.9 pounds per hour, respectively.

4. Describe how the flow (acfm), controlled and uncontrolled fluoride and particulate emissions, and capture efficiency from each scrubber in the DAP plant will change as a result of the proposed modification.

RESPONSE:

It is our understanding from discussion with Mr. Syed Arif, that the intent of this question was to identify the adequacy of the existing DAP plant scrubbers to accommodate the proposed project. As indicated above, the existing plant is capable of the higher production as demonstrated by test data already submitted to FDEP (see Appendix B of the permit application package). The scrubber efficiencies presented in the permit application reflect those referenced in "Air Pollution, It's Origin and Control" by Wark & Warner (1976).

5. Show the calculations in arriving at a net emissions increase of 955.9 TPY for ammonia and 100.2 TPY for particulates as shown in Table 3-2. Also, provide the details of the compliance test conducted in estimating ammonia emissions.

RESPONSE:

The calculation of the net emissions increase is provided in Attachment 2. No details or test data are available on the ammonia emissions presented in the permit application, other than a mention in an internal CONSERV (previous owner) memorandum. As this was the only documentation of the existing DAP plant's ammonia emissions, it was used in preparing the permit application.

6. Explain, in detail, the ammonia storage and handling system from the point it is received at the facility. Include safety measures for accidental releases and steps taken to control fugitive ammonia emissions from the system.

RESPONSE:

A description of the methods of controlling fugitive ammonia emissions and a process flow diagram of the ammonia storage and handling system are provided in Attachment 3.

7. Estimate the increase in emissions in the DAP storage and shipping building caused by the increased DAP production. Also, submit measures for controlling the emissions.

RESPONSE:

As the DAP product is granular and not dusty, no emissions are expected from the DAP storage building. This has also been verified by visual observation of material handling within the building.

8. Describe the proposed process flow controls planned to increase the operation efficiency of the DAP plant.

RESPONSE:

The reference to improvement in process flow control for the proposed project in the permit application refers to increasing operator skills, not equipment. As mentioned earlier, the existing DAP plant is capable of the higher production rates.

Mr. C. H. Fancy
Florida Department of
Environmental Regulation

July 30, 1993
Page 4

9. Expand your BACT recommendation to include the use of treated water in the scrubbers of the DAP plant. Estimate the increase in capture efficiency resulting from the use of treated water in the scrubbers. Also, provide the preliminary capital and operating cost of the scrubber water treatment system along with the cost per ton of fluoride removed.

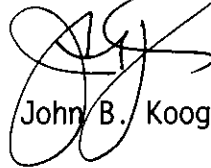
RESPONSE:

An expanded BACT addressing the use of treated water in the DAP plant scrubbers is presented in Attachment 4. The attached cost analysis rejects the use of treated water as BACT.

If you have questions, please do not hesitate to give me call.

Very truly yours,

KOOGLER & ASSOCIATES



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

JBK:PAR:wa

c: J. Girardin, IMC-Agrico

S. Arif

C. Holladay

B. Thomas, SW Dist

G. Harper, EPA

G. Bunyard, NPS

J. Noval, Polk Co.



ATTACHMENT 1
SUMMARY OF HISTORICAL DAP PLANT EMISSIONS
IMC-AGRICO COMPANY
NICHOLS PLANT



SUMMARY OF HISTORICAL DAP PLANT EMISSIONS

**IMC-AGRICO COMPANY
NICHOLS PLANT**

| YEAR | FLUORIDE EMISSIONS (lbs/hr) | | | PARTICULATE EMISSIONS (lbs/hr) | | |
|-----------------|--------------------------------|-------|--------|-----------------------------------|-------|--------|
| | R/G | DRYER | COOLER | R/G | DRYER | COOLER |
| 80 | 0.96 | 0.07 | 0.04 | 2.76 | 7.51 | 2.41 |
| 80 | 0.11 | 0.06 | 0.04 | 5.28 | 4.40 | 1.53 |
| 81 | 0.84 | 0.08 | 0.01 | 4.04 | 4.48 | 1.55 |
| 81 | 0.67 | 0.06 | 0.07 | 2.09 | 2.92 | 3.46 |
| 83 | 1.28 | 0.07 | 0.03 | 5.21 | 2.45 | 2.72 |
| 83 | | 0.05 | 0.01 | | 4.73 | 0.87 |
| 84 | 0.27 | 0.07 | 0.02 | 3.66 | 3.23 | 1.97 |
| 85(84) | 0.75 | 0.05 | 0.04 | 1.27 | 3.58 | 2.71 |
| 85 | 0.62 | 0.12 | 0.02 | 3.96 | 10.11 | 2.43 |
| 85 | 0.08 | 0.21 | 0.04 | 5.05 | 10.60 | 3.20 |
| 86 | 0.86 | 0.10 | 0.06 | 2.03 | 2.27 | 1.86 |
| 86 | 0.50 | 0.15 | 0.43 | 2.37 | 1.90 | 1.42 |
| 87 | 0.61 | 0.12 | 0.06 | 2.14 | 3.04 | 3.19 |
| 87 | 0.32 | 0.27 | 0.14 | 6.26 | 5.35 | 1.53 |
| 88 | 0.81 | 0.08 | 0.15 | 2.89 | 3.48 | 4.07 |
| 88 | 0.73 | 0.18 | 0.04 | 8.38 | 1.07 | 0.89 |
| 89 | 1.25 | 0.04 | 0.03 | 3.37 | 1.52 | 1.26 |
| 89 | 0.27 | 0.05 | 0.12 | 1.51 | 2.22 | 1.65 |
| 90 | 0.57 | 0.08 | 0.07 | 2.18 | 7.85 | 0.70 |
| 90 | 0.50 | 0.04 | 0.03 | 2.79 | 2.55 | 0.47 |
| 91 | 0.31 | 0.05 | 0.02 | 3.57 | 6.15 | 0.75 |
| 91 | 0.91 | 0.11 | 0.07 | 6.07 | 0.99 | 0.61 |
| 92 | 0.97 | 0.09 | 0.05 | 4.10 | 2.86 | 1.52 |
| 92 | 0.56 | 0.05 | 0.04 | 2.85 | 1.97 | 0.87 |
| 93 | 0.67 | 0.07 | 0.04 | 1.96 | 2.98 | 0.46 |
| Average | 0.64 | 0.09 | 0.07 | 3.57 | 4.01 | 1.76 |
| Std. Dev. | 0.31 | 0.06 | 0.08 | 1.70 | 2.56 | 1.00 |
| Maximum | 1.28 | 0.27 | 0.43 | 8.38 | 10.60 | 4.07 |
| Max + SD | 1.59 | 0.33 | 0.51 | 10.08 | 13.16 | 5.07 |
| Plant Total | | | | | | |
| Max + SD | | 2.43 | | | 28.31 | |
| Requested Limit | | 2.90 | | | 32.90 | |

ATTACHMENT 2

CALCULATION OF NET EMISSIONS INCREASE

IMC-AGRICO COMPANY
NICHOLS PLANT

The following calculations include a correction to an inadvertent error in carrying forward the numbers for actual particulate matter and ammonia emissions into the calculation of net emissions increase for the DAP plant:

4.0 NET ANNUAL EMISSION CHANGES

4.3 DAP PLANT

$$\text{PM} = (144.1 - 30.2) \text{ TPY} = 113.9 \text{ TPY}$$

$$\text{NH}_3 = (4779.9 - 3263.3) \text{ TPY} = 1516.6 \text{ TPY}$$

TOTAL NET CHANGES

$$\text{PM} = (0.38 + 113.9) \text{ TPY} = 114.3 \text{ TPY}$$

$$\text{NH}_3 = 1516.6 \text{ TPY}$$

Please note that the above corrected net emissions increases do not alter the rule applicability or any other aspect of the permit application package submitted to FDEP.



ATTACHMENT 3
DETAILS ON AMMONIA STORAGE AND HANDLING SYSTEM
IMC-AGRICO COMPANY
NICHOLS PLANT



ATTACHMENT 3

CONTROL OF FUGITIVE AMMONIA EMISSIONS
AMMONIA STORAGE AND HANDLING SYSTEM

IMC AGRICO COMPANY
NICHOLS PLANT

The ammonia handling system including tanks and associated piping and valves are installed according to the appropriate sections of the American National Standards Institute, Inc. (ANSI) Standard K61.1 titled Safety Requirements for the Storage and Handling of Anhydrous Ammonia. IMC Nichols Plant has a self-imposed program of ammonia tank inspection on a schedule of every five years. The valves and safety relief devices are sent out for certified repair on a two year schedule. We have always been attentive to such things as valve stem and flange leaks. This is not only an environmental and safety concern but also a loss of a valuable commodity.

IMC Nichols Plant receives ammonia by the Tampa Bay Pipeline, by rail cars and by trucks. Care is taken to be sure that all unloading rubber hoses are in good working condition, meet ANSI standards, and that no liquid ammonia is left in the hoses before disconnecting rail cars or trucks.

The ammonia tanks are equipped with an ammonia tank over-pressure alarm and an ammonia tank over-full alarm. The flows of ammonia into the plant are started only after the appropriate scrubber systems are operating. Finally, all pertinent scrubber functions are monitored during operation to assure proper operation at all times.

The start-up and shut-down of equipment and acid/ammonia flows into the reaction vessels and scrubbers are initiated in a sequence to minimize any ammonia losses. The plant operating limits are set to assure efficiency of ammonia recovery while in operation. Appropriate audible alarms are displayed on the operator console of the distributed digital control system to alert operators whenever scrubber flows fall below prescribed operating conditions. The plant is shut-down and repairs made if the scrubber flows are below the minimal flow for efficient ammonia scrubbing. The computer continually monitors the reaction and equipment parameters to assure efficient operation.

ATTACHMENT 4

BACT EVALUATION OF TREATED SCRUBBER WATER
FOR FLUORIDES EMISSIONS FROM DAP PLANT

IMC-AGRICO COMPANY
NICHOLS PLANT

Treatment of the scrubbing water with lime (calcium oxide) can produce a low fluoride tail gas scrubbing liquor. Test results on a similar plant in Polk County show that neutralization of the scrubber to a pH of about 4 results in the lowest practical fluoride emissions. If large amounts of water are used (in the order of 15 to 20 gallons per 1,000 cubic feet of air) about 95% fluoride scrubbing efficiency can be achieved. For the Nichols DAP plant, this would result in an additional reduction of fluoride emissions of about 6 tons per year, for an increase from 90 to 95 percent removal for the proposed fluoride emission rate of 12.7 tons per year.

An appropriate system for the liming scrubbing water would require a separate granulation cooling pond of approximately 30 acres at a nominal 5 foot depth for a total of 45 million gallons. The scrubbing requirements would be about 3,000 gallons per minute (gpm). A lined 30 acre pond would cost about \$4,500,000. The cost of the liming station and associated piping and pumping would be \$1,500,000. The annual pumping cost would be about \$22,300. The cost of operating would be about \$15,000 per year. Total liming cost for the make-up water at about 800 pounds per hour would be about \$186,000 per year.

System operating problems would include calcium build-up and fall-out in the tail gas scrubber. There would also be a problem of disposal of the sludge generated by the liming process. There would be about 3,700 tons per year of water treatment sludge generated and the cost of disposal would be \$185,000 per year, at a disposal cost of \$50.00 per ton. For the whole system, on an annual cost basis assuming a 20 year life with an annual rate of return of 10%, the cost would be:

| | |
|--|----------------|
| System, \$6,000,000 @ 10% for 20 years | \$704,758 |
| lime cost | 186,000 |
| pumping cost | 22,300 |
| operating | 15,000 |
| maintenance | 10,000 |
| sludge disposal | <u>185,000</u> |
| TOTAL | \$1,123,058 |

The total cost to reduce an additional 6 tons of fluoride per year would be:

$$\text{Cost/Ton F} = \$1,123,058/6 = \$187,176$$

It is evident that additional reduction in emissions of fluoride can not be achieved without excessive cost to the applicant. The use of treated scrubber water for reducing the fluoride emissions from the DAP plant is therefore rejected as BACT.





CERTIFIED MAIL
RETURN RECEIPT REQUESTED



June 4, 1993

RECEIVED

JUN 09 1993

**Division of Air
Resources Management**

Mr. Clair H. Fancy
Chief
Bureau of Air Regulation
Florida Department of Environmental
Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

RE: Proposed DAP Production Increase
Permit File No. AC53-230355, PSD-FL-204

Dear Mr. Fancy:

As requested in Item 1. of your letter of May 26, 1993, IMC Fertilizer, Inc. - New Wales Operations - Nichols Plant is herewith submitting the additional \$7,500 for the review of the Diammonium Phosphate permit application.

The additional information requested in Items 2. through 9. will be submitted separately via John Koogler.

Sincerely,

A handwritten signature in cursive script, appearing to read "J. M. Baretincic".

J. M. Baretincic
Director
Environmental Services

JMB:lmr
Enclosure

CC: J. A. Brafford
J. B. Koogler

(#6)



IMC Fertilizer, Inc. New Wales Operations,
PO Box 1035, Mulberry, Florida 33860

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Fold at line over top of envelope to the
right of the return address

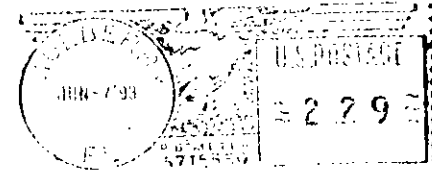
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P 258 355 532

MAIL

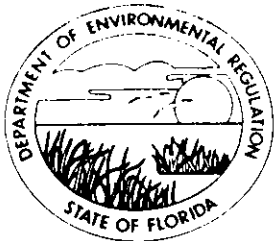
IMC FERTILIZER, INC.

MULBERRY FL 33860



Mr. Clair H. Fancy
Chief
Bureau of Air Regulation
Florida Department of Environmental
Regulation
Twin Towers Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400





Florida Department of Environmental Regulation

Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400

Lawton Chiles, Governor

Virginia B. Wetherell, Secretary

May 26, 1993

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. John B. Koogler, Ph.D., P.E.
Koogler & Associates
4014 NW 13th St.
Gainesville, Florida 32609

Re: IMC Fertilizer, Inc.
Proposed Sulfuric Acid & DAP Production Increase
Permit File No. AC53-230355, PSD-FL-204

Dear Mr. Koogler:

The Department has received the application for an increase in the sulfuric acid and diammonium phosphate production rates of the existing facilities at the IMC's Nichols Plant in Polk County. Based on our initial review of the proposed project, we have determined that additional information is needed in order to continue processing this application package. Please submit the information requested below to the Department's Bureau of Air Regulation.

1. Submit an additional \$7,500 permit application fee for the review of the Diammonium Phosphate (DAP) application. The fee of \$7,500 that was submitted with the permit application will cover the Sulfuric Acid Plant and the Molten Sulfur System applications.
2. Provide storage tank capacities, throughput rate increases, etc. of molten sulfur, sulfuric acid, DAP and ammonia for the facility to handle increased production rates.
3. Provide the April, 1993, compliance test results of the actual emission rates of fluorides and particulates from the DAP plant. Also, provide the highest fluoride and particulate emissions that have been measured from each scrubber in the DAP plant during normal operations.
4. Describe how the flow (acfm), controlled and uncontrolled fluoride and particulate emissions, and capture efficiency from each scrubber in the DAP plant will change as a result of the proposed modification.

Mr. John B. Koogler
Permit File No. AC53-230355, PSD-FL-204
Page Two

5. Show the calculations in arriving at a net emissions increase of 955.9 TPY for ammonia and 100.2 TPY for particulates as shown in Table 3-2. Also, provide the details of the compliance test conducted in estimating ammonia emissions.
6. Explain, in detail, the ammonia storage and handling system from the point it is received at the facility. Include safety measures for accidental releases and steps taken to control fugitive ammonia emissions from the system.
7. Estimate the increase in emissions in the DAP storage and shipping building caused by the increased DAP production. Also, submit measures for controlling the emissions.
8. Describe the proposed process flow controls planned to increase the operation efficiency of the DAP plant.
9. Expand your BACT recommendation to include the use of treated water in the scrubbers of the DAP plant. Estimate the increase in capture efficiency resulting from the use of treated water in the scrubbers. Also, provide the preliminary capital and operating cost of the scrubber water treatment system along with cost per ton of fluoride removed.

If there are any questions, please write to me or call Syed Arif at (904) 488-1344.

Sincerely,



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

CHF/SA/plm

cc: B. Thomas, SWD
J. Brafford, IMC
J. Harper, EPA
J. Bunyak, NPS
L. Novak, Polk Co.

Is your RETURN ADDRESS completed on the reverse side?

SENDER:

- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

- 1. Addressee's Address
- 2. Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

John B. Koogler, Ph.D., P.E.
 Koogler & Associates
 4014 N.W. 13th St.
 Gainesville, FL 32609

4a. Article Number

P 230 524 305

4b. Service Type

- Registered Insured
- Certified COD
- Express Mail Return Receipt for Merchandise

7. Date of Delivery

6/1/93 D.E. ALLEN

5. Signature (Addressee)

Nancy Overback

6. Signature (Agent)

8. Addressee's Address (Only if requested and fee is paid)

PS Form 3811, December 1991

U.S. GPO: 1992-323-402

DOMESTIC RETURN RECEIPT

Thank you for using Return Receipt Service.

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Receipt for Certified Mail

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| Street and No. 4014 NW 13th St. | |
| City, State and ZIP Code Gainesville, FL 32609 | |
| Postage | \$ |
| Certified Fee | |
| Special Delivery Fee | |
| Restricted Delivery Fee | |
| Return Receipt Showing to Whom & Date Delivered | |
| Return Receipt Showing to Whom, Date, and Addressee's Address | |
| TOTAL Postage & Fees | \$ |
| Postmark or Date Mailed: 5-27-93 | |
| Permit: AC53-230355 | |
| PSD-FL-204 | |

PS Form 3800, June 1991



State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

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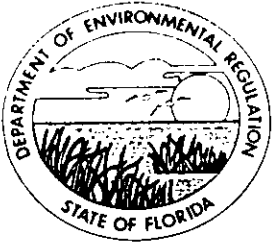
Interoffice Memorandum

TO: Howard L. Rhodes
FROM: Clair Fancy *CF*
DATE: May 25, 1993
SUBJ: Denial of Operation Permit
Southern Soil Services, Inc.

Attached for your approval and signature is an order that will deny a permit to operate a mobile soil thermal treatment facility in Osceola County. The permittee chose not to install a continuous emissions monitor for carbon monoxide as required by the Department's regulation.

I recommend your approval and signature.

CF/WH/plm



Florida Department of Environmental Regulation

Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400

Lawton Chiles, Governor

Virginia B. Wetherell, Secretary

April 30, 1993

Ms. Linda Novak
Polk County Board of County Commissioners
Environmental Services Department
P. O. Box 60
330 West Church Street
Bartow, FL 33830

Dear Ms. Novak:

IMC Fertilizer, Inc.
Production Increase
Polk County, PSD-FL-204

The Department has received the above refernced PSD application package. Please review this package and forward your comments to the Department's Bureau of Air Regulation by May 25, 1993. The Bureau's FAX number is (904)922-6979.

If you have any questions, please call Syed Arif or Cleve Holladay at (904)488-1344 or write to me at the above address.

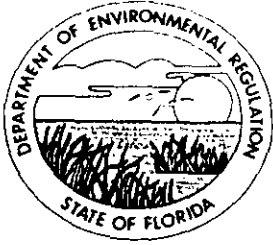
Sincerely,

Patricia G. Adams

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

CHF/pa

Enclosure



Florida Department of Environmental Regulation

Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400

Lawton Chiles, Governor

Virginia B. Wetherell, Secretary

April 30, 1993

Mr. John Bunyak, Chief
Policy, Planning and Permit Review Branch
National Park Service-Air Quality Division
P. O. Box 25287
Denver, CO 80225

Dear Mr. Bunyak:

RE: IMC Fertilizer, Inc.
Production Increase
Polk County, PSD-FL-204

The Department has received the above referenced PSD application package. Please review this package and forward your comments to the Department's Bureau of Air Regulation by May 25, 1993. The Bureau's FAX number is (904)922-6979.

If you have any questions, please contact Syed Arif or Cleve Holladay at (904)488-1344 or write to me at the above address.

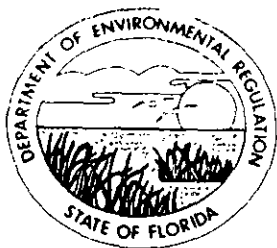
Sincerely,

Patricia G. Adams

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

CHF/pa

Enclosures



Florida Department of Environmental Regulation

Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400

Lawton Chiles, Governor

Virginia B. Wetherell, Secretary

April 30, 1993

Ms. Jewell A. Harper, Chief
Air Enforcement Branch
U.S. EPA, Region IV
345 Courtland Street, N.E.
Atlanta, Georgia 30308

Dear Ms. Harper:

RE: IMC Fertilizer, Inc.
Production Increase
Polk County, PSD-FL-204

The Department has received the above referenced PSD application package. Please review this package and forward your comments to the Department's Bureau of Air Regulation by May 26, 1993. The Bureau's FAX number is (904)922-6979.

If you have any questions, please contact Syed Arif or Cleve Holladay at (904)488-1344 or write to me at the above address.

Sincerely,

Patricia B. Adams
for
C. H. Fancy, P.E.
Chief
Bureau of Air Regulation

CHF/pa

Enclosures