



Department of Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

July 24, 1998

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. E. M. Newberg
Vice President and General Manager
Concentrated Phosphate Operations
IMC-Agrico Company
Post Office Box 2000
Mulberry, Florida 33860

Re: DEP File No. 1050059-024-AC (PSD-FL-244)
Multifos Animal Feed Plant Expansion

Dear Mr. Newberg:

Enclosed is one copy of the Draft Air Construction Permit to add to add a new 25 tons per hour kiln and modify the existing units at the Multifos Animal Feed Plant located at the IMC-Agrico New Wales Facility, 3095 Highway 640, Mulberry Polk County. The Department's Intent to Issue Air Construction Permit and the "PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION PERMIT" are also included.

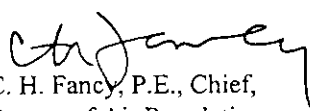
The "PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION PERMIT" must be published in the legal section of a newspaper of general circulation in Polk County. Proof of publication, i.e., newspaper affidavit, must be provided to the Department's Bureau of Air Regulation office within 7 (seven) days of publication. Failure to publish the notice and provide proof of publication within the allotted time may result in the denial of the permit.

The original application indicated that the project was not subject to PSD Review for nitrogen oxides emissions. Subsequently, the Department obtained test summaries from a facility in the State of Virginia indicating that a kiln serving an identical process emits a significant amount of nitrogen oxides. We also received a statement from IMC-Agrico indicating that based on results from a similar facility and other estimating procedures, the emissions of NO_x are not subject to PSD. We request, prior to the final action on your application, more details on the NO_x control measures to be incorporated into the kiln design to provide reasonable assurance that it will either emit less than significant emissions of NO_x or that it will meet the requirements of Best Available Control Technology. Test results conducted on your existing Kilns A and B would be also be useful in this regard.

Per Rule 62-4.070(1), F.A.C., "a permit shall be issued to the applicant upon such conditions as the Department may direct, only if the applicant affirmatively provides the Department with reasonable assurance based on plans, test results, installation of pollution control equipment, or other information that the construction, expansion, modification, operation, or activity of the installation will not discharge, emit, or cause pollution in contravention of Department standards or rules."

Please submit any written comments you wish to have considered concerning the Department's proposed action to A. A. Linero, P.E., Administrator, New Source Review Section at the above letterhead address. If you have any other questions, please call John Reynolds at 850/921-9536 or Mr. Linero at 850/921-9523

Sincerely,


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

CHF/aal

Enclosures

"Protect, Conserve and Manage Florida's Environment and Natural Resources"

PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION PERMIT

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DEP File No. 1050059-024-AC (PSD-FL-244)
IMC-Agrico Company Multifos Plant Expansion
Polk County

The Department of Environmental Protection (Department) gives notice of its intent to issue an air construction permit to IMC-Agrico Company to increase the capacity of the existing Multifos Plant located at 3095 Highway 640, Mulberry, Polk County, Florida. The applicant's name and address are: IMC-Agrico Company, Post Office Box 2000, Mulberry, Polk County, Florida 33860.

A Best Available Control Technology (BACT) determination was required for nitrogen oxides (NO_x), sulfur dioxide (SO₂), particulate matter (PM/PM₁₀), and fluorides (F) pursuant to Rule 62-212.400, F.A.C., Prevention of Significant Deterioration (PSD). A case-by-case Maximum Achievable Control Technology (MACT) determination pursuant to Rule 62-204.800(10)(d)2, F.A.C. and 40CFR63, Subpart B, Requirements for Control Technology Determinations for Major Sources in Accordance with Clean Air Act, Sections 112(g) and 112(j) was not required because the Department's BACT determination reduces hydrogen fluoride emissions so that the plant is not a major source of hazardous air pollutants (HAPs).

IMC-Agrico Company proposes to expand the Multifos Animal Feed Plant by enlarging the capacity of the feed preparation section and installing a third rotary kiln (Kiln C) adjacent to the two existing Kilns A and B. Production capability will be increased from 30 to 55 tons per hour. The kilns defluorinate a pre-processed mixture of phosphate rock, phosphoric acid and soda ash. If uncontrolled, emissions of hydrogen fluoride (HF), a hazardous air pollutant (HAP), are potentially 4000 tons per year (TPY). After control by packed scrubbers using neutralized water, the HF emissions will be approximately 2 tons per year which is less than the 10 tons per year HAP major source threshold that would otherwise require a MACT determination. The BACT determination requires that packed scrubbers using caustic solution for SO₂ control be installed downstream of the HF scrubbers. Removal of PM/PM₁₀ from the kiln off-gases is also accomplished by these scrubbers. Baghouses are being installed to remove PM/PM₁₀ from the low-moisture emission points in the plant.

The details of the control strategy for NO_x must be submitted by IMC-Agrico prior to the Department's final action per Rule 62-4.070(1), F.A.C. This will provide reasonable assurance that the kiln design will limit emissions increases of NO_x to either a level representative of BACT or to less than 40 tons per year.

An air quality impact analysis was conducted. Emissions from the facility will not significantly contribute to or cause a violation of any state or federal ambient air quality standards. The maximum predicted PSD Class II increments of NO₂, SO₂, and PM₁₀ consumed by all sources in the area, including this project, will be as follows:

	PSD Class II Increment Consumed ($\mu\text{g}/\text{m}^3$)	Allowable Increment ($\mu\text{g}/\text{m}^3$)	Increment Consumed (percent)
PM ₁₀			
24-hour	28	30	93
SO ₂			
3-hour	14	512	3
24-hour	0.9	91	1
NO ₂			
Annual	6.2	2.6	10

The project is predicted to have no significant impact on the Cnassahowitzka National Wilderness Area PSD Class I area located approximately 103 kilometers northwest of the plant.

The Department will issue the final permit with the attached conditions unless a response received in accordance with the following procedures results in a different decision or significant change of terms or conditions.

The Department will accept written comments concerning the proposed permit issuance action for a period of 30 (thirty) days from the date of publication of "Public Notice of Intent to Issue Air Construction Permit." Written comments should be provided to the Department's Bureau of Air Regulation at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, FL 32399-2400. Any written comments filed shall be made available for public inspection. If written comments received result in a significant change in the proposed agency action, the Department shall revise the proposed permit and require, if applicable, another Public Notice.

The Department will issue the permit with the attached conditions unless a timely petition for an administrative hearing is filed pursuant to sections 120.569 and 120.57 F.S., before the deadline for filing a petition. The procedures for petitioning for a hearing are set forth below. Mediation is not available in this proceeding.

A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative proceeding (hearing) under sections 120.569 and 120.57 of the Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station # 35, Tallahassee, Florida, 32399-3000. Petitions filed by the permit applicant or any of the parties listed below must be filed within fourteen days of receipt of this notice of intent. Petitions filed by any persons other than those entitled to written notice under section 120.60(3) of the Florida Statutes must be filed within fourteen days of publication of the public notice or within fourteen days of receipt of this notice of intent, whichever occurs first. Under section 120.60(3), however, any person who asked the Department for notice of agency action may file a petition within fourteen days of receipt of that notice, regardless of the date of publication. A petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under sections 120.569 and 120.57 F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention will be only at the approval of the presiding officer upon the filing of a motion in compliance with rule 28-106.205 of the Florida Administrative Code.

A petition that disputes the material facts on which the Department's action is based must contain the following information: (a) The name and address of each agency affected and each agency's file or identification number, if known; (b) The name, address, and telephone number of the petitioner, the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests will be affected by the agency determination; (c) A statement of how and when petitioner received notice of the agency action or proposed action; (d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate; (e) A concise statement of the ultimate facts alleged, as well as the rules and statutes which entitle the petitioner to relief; and (f) A demand for relief.

A petition that does not dispute the material facts upon which the Department's action is based shall state that no such facts are in dispute and otherwise shall contain the same information as set forth above, as required by rule 28-106.301.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Department's final action may be different from the position taken by it in this notice. Persons whose substantial interests will be affected by any such final decision of the Department on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

A complete project file is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:

Dept. of Environmental Protection
Bureau of Air Regulation
111 S. Magnolia Drive, Suite 4
Tallahassee, Florida 32301
Telephone: 850/488-1344
Fax: 850/922-6979

Dept. of Environmental Protection
Southwest District Office
3804 Coconut Palm Drive
Tampa, Florida 33619-8218
Telephone: 813/744-6100
Fax: 813/744-6084

Polk County Public Works Dept.
Natural Resources & Drainage
Bartow, Florida 33830
Telephone: 941/534-7377
Fax: 941/534-7373

The complete project file includes the Draft Permit, the application, and the information submitted by the responsible official, exclusive of confidential records under Section 403.111, F.S. Interested persons may contact the Administrator, New Resource Review Section at 111 South Magnolia Drive, Suite 4, Tallahassee, Florida 32301, or call 850/488-0114, for additional information.

In the Matter of an
Application for Permit by:

Mr. E. M. Newberg, VP & GM
Concentrated Phosphate Operations
IMC-Agrico Company
Post Office Box 2000
Mulberry, Florida 33860

DEP File No. 1050059-024-AC
Draft PSD Permit No. PSD-FL-244
Multifos Plant Modifications and New Kiln
Polk County

INTENT TO ISSUE AIR CONSTRUCTION PERMIT

The Department of Environmental Protection (Department) gives notice of its intent to issue an air construction permit (copy of DRAFT Permit attached) for the proposed project, as detailed in the application specified above and attached Technical Review and Preliminary determination, for the reasons stated below.

The applicant, IMC-Agrico Company, applied on December 1, 1997 to the Department for an air construction permit for its Multifos Animal Feed Plant at its New Wales Phosphate Fertilizer Facility located at 3095 Highway 640, Mulberry, Polk County. The application is for enlarging the feed preparation section and installing a 25 tons per hour/defluorination kiln with associated materials handling equipment and air pollution controls.

The Department has permitting jurisdiction under the provisions of Chapter 403, Florida Statutes (F.S.), and Florida Administrative Code (F.A.C.) Chapters 62-4, 62-210, and 62-212. The above actions are not exempt from permitting procedures. The Department has determined that an air construction permit, including a review for the Prevention of Significant Deterioration and a determination of Best Available Control Technology for the control of fluorides, sulfur dioxide, particulate matter, is required to conduct the work.

The Department intends to issue this air construction permit based on the belief that reasonable assurances have been provided to indicate that operation of these emission units will not adversely impact air quality, and the emission units will comply with all appropriate provisions of Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297, F.A.C.

Pursuant to Section 403.815, F.S., and Rule 62-110.106(7)(a)1., F.A.C., you (the applicant) are required to publish at your own expense the enclosed "Public Notice of Intent to Issue Air Construction Permit." The notice shall be published one time only in the legal advertisement section of a newspaper of general circulation in the area affected. For the purpose of these rules, "publication in a newspaper of general circulation in the area affected" means publication in a newspaper meeting the requirements of Sections 50.011 and 50.031, F.S., in the county where the activity is to take place. Where there is more than one newspaper of general circulation in the county, the newspaper used must be one with significant circulation in the area that may be affected by the permit. If you are uncertain that a newspaper meets these requirements, please contact the Department at the address or telephone number listed below. The applicant shall provide proof of publication to the Department's Bureau of Air Regulation, at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, Florida 32399-2400 (Telephone: 850/488-0114; Fax 850/ 922-6979). The Department suggests that you publish the notice within thirty days of receipt of this letter. You must provide proof of publication within seven days of publication, pursuant to Rule 62-110.106(5), F.A.C. No permitting action for which published notice is required shall be granted until proof of publication of notice is made by furnishing a uniform affidavit in substantially the form prescribed in section 50.051, F.S. to the office of the Department issuing the permit or other authorization. Failure to publish the notice and provide proof of publication may result in the denial of the permit pursuant to Rules 62-110.106(9) & (11), F.A.C.

The Department will issue the final permit with the attached conditions unless a response received in accordance with the following procedures results in a different decision or significant change of terms or conditions.

The Department will accept written comments concerning the proposed permit issuance action for a period of 30 (thirty) days from the date of publication of "Public Notice of Intent to Issue Air Construction Permit." Written comments should be provided to the Department's Bureau of Air Regulation at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, FL 32399-2400. Any written comments filed shall be made available for public inspection. If written comments received result in a significant change in the proposed agency action, the Department shall revise the proposed permit and require, if applicable, another Public Notice.

The Department will issue the permit with the attached conditions unless a timely petition for an administrative hearing is filed pursuant to sections 120.569 and 120.57 F.S., before the deadline for filing a petition. The procedures for petitioning for a hearing are set forth below.

A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative proceeding (hearing) under sections 120.569 and 120.57 of the Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station # 35, Tallahassee, Florida, 32399-3000. Petitions filed by the permit applicant or any of the parties listed below must be filed within fourteen days of receipt of this notice of intent. Petitions filed by any persons other than those entitled to written notice under section 120.60(3) of the Florida Statutes must be filed within fourteen days of publication of the public notice or within fourteen days of receipt of this notice of intent, whichever occurs first. Under section 120.60(3), however, any person who asked the Department for notice of agency action may file a petition within fourteen days of receipt of that notice, regardless of the date of publication. A petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under sections 120.569 and 120.57 F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention will be only at the approval of the presiding officer upon the filing of a motion in compliance with rule 28-106.205 of the Florida Administrative Code.

A petition that disputes the material facts on which the Department's action is based must contain the following information: (a) The name and address of each agency affected and each agency's file or identification number, if known; (b) The name, address, and telephone number of the petitioner, the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests will be affected by the agency determination; (c) A statement of how and when petitioner received notice of the agency action or proposed action; (d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate; (e) A concise statement of the ultimate facts alleged, as well as the rules and statutes which entitle the petitioner to relief; and (f) A demand for relief.

A petition that does not dispute the material facts upon which the Department's action is based shall state that no such facts are in dispute and otherwise shall contain the same information as set forth above, as required by rule 28-106.301

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Department's final action may be different from the position taken by it in this notice. Persons whose substantial interests will be affected by any such final decision of the Department on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above. Mediation is not available in this proceeding.

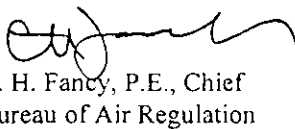
In addition to the above, a person subject to regulation has a right to apply for a variance from or waiver of the requirements of particular rules, on certain conditions, under Section 120.542 F.S. The relief provided by this state statute applies only to state rules, not statutes, and not to any federal regulatory requirements. Applying for a variance or waiver does not substitute or extend the time for filing a petition for an administrative hearing or exercising any other right that a person may have in relation to the action proposed in this notice of intent.

The application for a variance or waiver is made by filing a petition with the Office of General Counsel of the Department, 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000. The petition must specify the following information: (a) The name, address, and telephone number of the petitioner; (b) The name, address, and telephone number of the attorney or qualified representative of the petitioner, if any; (c) Each rule or portion of a rule from which a variance or waiver is requested; (d) The citation to the statute underlying (implemented by) the rule identified in (c) above; (e) The type of action requested; (f) The specific facts that would justify a variance or waiver for the petitioner; (g) The reason why the variance or waiver would serve the purposes of the underlying statute (implemented by the rule); and (h) A statement whether the variance or waiver is permanent or temporary and, if temporary, a statement of the dates showing the duration of the variance or waiver requested.

The Department will grant a variance or waiver when the petition demonstrates both that the application of the rule would create a substantial hardship or violate principles of fairness, as each of those terms is defined in Section 120.542(2) F.S., and that the purpose of the underlying statute will be or has been achieved by other means by the petitioner.

Persons subject to regulation pursuant to any federally delegated or approved air program should be aware that Florida is specifically not authorized to issue variances or waivers from any requirements of any such federally delegated or approved program. The requirements of the program remain fully enforceable by the Administrator of the EPA and by any person under the Clean Air Act unless and until the Administrator separately approves any variance or waiver in accordance with the procedures of the federal program.

Executed in Tallahassee, Florida.


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

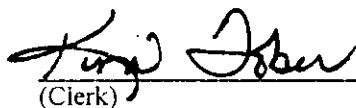
CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this INTENT TO ISSUE AIR CONSTRUCTION PERMIT (including the PUBLIC NOTICE, and DRAFT permit) was sent by certified mail (*) and copies were mailed by U.S. Mail before the close of business on 7-24-98 to the person(s) listed:

Mr. E. M. Newberg, IMC-Agrico*
Mr. Brian Beals, EPA
Mr. John Bunyak, NPS
Mr. John Koogler, P.E.
Mr. Bill Thomas, SWD
Mr. Joe King, Polk Co.

Clerk Stamp

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


(Clerk) 7-24-98
(Date)

is your RETURN ADDRESS completed on the reverse side?

PS Form 3800, April 1994

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

- Addressee's Address
- Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
M. E. M. Newberg, VP
Concentrated Phosphates
DMC-AgriCo Co
PO Box 2000
Mulberry, FL 33860

4a. Article Number
P 265 659 394

4b. Service Type

<input type="checkbox"/> Registered	<input checked="" type="checkbox"/> Certified
<input type="checkbox"/> Express Mail	<input type="checkbox"/> Insured
<input type="checkbox"/> Return Receipt for Merchandise	<input type="checkbox"/> COD

7. Date of Delivery
7-28-98

5. Received By: (Print Name)

6. Signature: (Addressee or Agent)
X The Journal

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

Thank you for using Return Receipt Service.

PS Form 3800, April 1994

P 265 659 394

US Postal Service
Receipt for Certified Mail
No Insurance Coverage Provided.
Do not use for International Mail (See reverse)

Sent to		E M Newberg	
Street & Number		DMC-AgriCo Co	
Post Office, State, & ZIP Code		Mulberry FL	
Postage	\$		
Certified Fee			
Special Delivery Fee			
Restricted Delivery Fee			
Return Receipt Showing to Whom & Date Delivered			
Return Receipt Showing to Whom, Date, & Addressee's Address			
TOTAL Postage & Fees	\$		
Postmark or Date	PSD-FL-244	7-24-98	

PS Form 3800, April 1995

Technical Evaluation
and
Preliminary Determination

IMC-Agrico Company
New Wales Plant
Polk County, Florida

Installation of Kiln C
Multifos Production Plant

Construction Permit No. 1050059-024-AC
PSD-FL-244

Department of Environmental Protection
Division of Air Resources Management
Bureau of Air Regulation

July 24, 1998

TECHNICAL EVALUATION AND PRELIMINARY

I. GENERAL INFORMATION

A. Name and Address of Applicant

IMC-Agrico Company
3095 Highway 640
P.O. Box 2000
Mulberry, Florida 33860

B. Reviewing and Process Schedule

Date of Receipt of Application: December 1, 1997
Request for Additional Information: December 16, 1997
Application Completeness Date: May 21, 1998

C. Facility Location

This facility is located at 3095 Highway 640, Mulberry, Polk County, Florida. The UTM coordinates are Zone 17, 396.6 km east and 3078.9 km north.

Facility Identification Code (SIC): Major Group No. 28 Industry Group No. 2874

II. TECHNICAL EVALUATION

A. Project Description

The applicant proposes to construct a third rotary kiln (Kiln C) adjacent to the two existing Kilns A & B at the existing "Multifos" animal feed supplement facility at the applicant's New Wales location. Kilns A & B each have a permitted capacity of approximately 15 tons per hour of raw material containing about 5.67 tons P₂O₅ per hour, being limited in total to 11.35 tons P₂O₅ per hour. The new kiln will have the same physical dimensions as the existing kilns but will be permitted to process 25 tons per hour of raw material containing 9.50 tons P₂O₅ per hour. To provide the additional phosphate rock drying capacity required for the new kiln, the existing rock dryer will operate at a higher capacity. Also installed will be a larger capacity mixed feed pug mill to serve all three kilns. A new cooler, screens and mills will be installed for the new production line.

According to the BACT determination, air pollution control equipment will consist of a new packed crossflow scrubber for control of fluorides and particulate matter from the new kiln, a new fluoride scrubber for the mixed feed storage building, two new bag collectors for controlling dust from the new cooler, crusher, screens and mills, and three caustic SO₂ scrubbers to be installed in series with and downstream of the fluoride crossflow scrubbers.

TECHNICAL EVALUATION AND PRELIMINARY

The applicant proposed that the new kiln be exhausted to the existing stack which would be common for all three kilns. There would be four separate scrubbing systems connected to a common stack; the dryer/blending scrubber and the three sets of kiln scrubbers, resulting in an unmanageable situation for compliance testing. The proposed permit requires the new scrubbing systems to demonstrate compliance with their BACT limits separately from the existing scrubbers that currently discharge through the common stack. The new kiln scrubbers and the new mixed feed storage building scrubber will each have their own stack. Whereas the two existing kiln scrubbers are currently allowed to be tested together, the proposed permit requires that they be tested independently of one another.

The following is an explanation of the application completion date listed above (May 21, 1998). The original application received on December 1, 1997 contained insufficient information on the details of the project, the description of the process, the calculation of emissions, and the BACT analysis. The "Control Technology" section contained only about one page of information.

The first problem causing delay was the lack of test data for SO₂ and NO_x emissions. The Department requested SO₂ and NO_x emission data and other information on December 16, 1997. On March 9 the Department received results of a 30 minute SO₂ stack test that the applicant had performed in September of 1997. The applicant's analysis stated that 296.4 lb SO₂/hr was measured but no material feed rate was reported. Since the two kilns are operated concurrently, the applicant rounded off the 296.4 to 300 and took half of that to arrive at 150 lb SO₂/hr to represent the emissions from the new kiln. The applicant also proposed that, based on emissions of 150 lb/hr, a moderately efficient (95%) scrubber is all that would be required to escape PSD review for SO₂. The Department informed the applicant that the 150 lb/hr estimate did not allow for the fact that the new kiln would be permitted for a feed rate that is 83.3% of the total combined rate of the two existing kilns (25 TPH for the new kiln vs. 30 TPH for the two existing kilns) and therefore the 150 lb/hr estimate understates emissions by at least 97 lb SO₂/hr or 425 tons/yr.

At the Department's request, a three-hour EPA Method 8 emission test was conducted on April 9, 1998 and the results reported to the Department on April 20. Along with results showing 376 lb SO₂/hr emitted at a kiln feed rate of 8.24 tons P₂O₅/hr, the applicant changed its proposal to a higher efficiency scrubber (97%) to escape PSD applicability for SO₂ on the basis of this single test. Further complicating the review of the application at this point was the applicant's proposal, received on April 27, that the feed rate to the new kiln be capped at 6.5 tons P₂O₅/hr instead of the 9.5 tons per hour originally requested, in order to escape PSD review for both SO₂ and NO_x. To escape NO_x applicability, the applicant proposed that a relatively low emission factor based on a test at another plant be accepted but the accuracy could not be verified. It became apparent that even if the feed rate is capped at 6.5 tons P₂O₅/hr, the project is subject to PSD for NO_x using an AP-42 emission factor (see BACT determination). Consequently, the Department determined that the originally requested feed rate would be used since the proposed cap did not accomplish the applicant's objective of escaping PSD review. Still unresolved was the applicability under the Department's "calcining or other thermal rock processing" rule vs. "defluorinating phosphate rock by thermal processing" since the process defluorinates a modified triple superphosphate rather than phosphate rock *per se*.

TECHNICAL EVALUATION AND PRELIMINARY

After PSD applicability for SO₂ became apparent, the Department's research disclosed the existence of a similar plant operated by PCS Phosphates in Saltville, Virginia. Several years ago this plant was permitted for the same modification (a third defluorination kiln) that the applicant proposes in this project. Although somewhat smaller (21 tons feed/hr vs. 25 tons feed/hr), the PCS plant produces the same basic products (defluorinated feed phosphates) as the applicant's facility using basically the same raw materials (phosphate rock, phosphoric acid and soda ash) while employing state-of-the-art emission control equipment (two scrubbers in series using pH-controlled double-alkali scrubbing technology). The process categorization issue mentioned earlier was resolved on May 21 when the applicant submitted additional information verifying that the process is the same as operated by PCS.

B. Process Description

A mixture of dried phosphate rock, soda ash and phosphoric acid is calcined at a temperature sufficient to produce a defluorinated calcium phosphate for use as an animal feed supplement. The "mixed feed" is made by mixing phosphoric acid from the blend tanks with soda ash and phosphate rock in a pug mill. The mixed feed from the pug mill (a form of triple superphosphate) is conveyed to a storage building where the reactions proceed to completion as the material cures. Cured material is then routed to a feed bin and then to the rotary kilns where the mixture is contacted by the kiln burner exhaust gases which drive off fluorine (as HF) at temperatures in the range of 2700-2800 degrees F. HF is a hazardous air pollutant (HAP) pursuant to Rule 62-210(147), Florida Administrative Code (F.A.C.). Heavy metals such as chromium, mercury, lead, and nickel are present in the phosphate rock as well as cadmium. The calcined product is transferred to the rotary cooler and then to the milling, screening and sizing equipment. Kiln exhaust gases are routed to the scrubbers while the cooler gases are controlled by a bag collector.

C. Project Emissions

Emissions proposed by the applicant are summarized in the table below:

Pollutant	PSD Level ¹	Actual Emissions ²	Current Allowables	Proposed New Emissions ³	Net Change ⁴	Subject to PSD Review?
F	3	13.0	14.8	15.3	17.1	Yes
PM	25/15 ⁵	57.6	130.7	123.8	196.9	Yes
NO _x	40	39.8	N/A	39.0	<40	Escape PSD
SO ₂	40	1,193	N/A	39.0	<40	Escape PSD
CO	100	8.9	N/A	9.5	9.5	No
VOC	40	1.5	N/A	1.5	1.5	No
VE	N/A	17%	20%	20%	N/A	N/A

¹ Tons per year (Rule 212.400, F.A.C.)

² Calculated by DEP based on two-year average using 1998 and 1997 compliance data for F and PM/PM₁₀; 1997/1996 average actual tonnage times 1998 test result for SO₂; emission factor times 1997/1996 average actual tonnage for NO_x, CO and VOC emissions.

³ Proposed by applicant as additional allowable emissions.

⁴ Applicant's proposed allowable facility emissions minus current actuals determined by DEP.

⁵ PM/PM₁₀

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Emissions proposed by the Department in the BACT determination are presented below:

POLLUTANT	EMISSION LIMIT	LIMIT BASIS
F (Kiln A/B Stack)	0.43 lb/hr	0.038 lb F/ton P ₂ O ₅ input to kilns (PCS limit basis)
F (Kiln C Stack)	0.36 lb/hr	0.038 lb F/ton P ₂ O ₅ input to kiln (PCS limit basis)
F (Feed Storage)	0.0005 lb/hr/ton equiv. P ₂ O ₅ stored	Equivalent to NSPS-Subpart X for TSP Storage
PM (Kiln A/B Stk)	17.0 lb/hr	1.50 lb/ton P ₂ O ₅ input to kilns (PCS limit basis)
PM (Kiln C Stack)	14.3 lb/hr	1.50 lb/ton P ₂ O ₅ input to kilns (PCS limit basis)
SO ₂ (Kiln A/B Stk)	10.4 lb/hr	98% Efficient Scrubber based on 4/9/98 test
SO ₂ (Kiln C Stack)	8.7 lb/hr	98% Efficient Scrubber based on 4/9/98 test
NO _x (Kiln A/B Stk)	To be determined following testing	To be determined following testing
NO _x (Kiln C Stack)	To be determined following testing	To be determined following testing
HAPs (Kilns A/B/C)	To be determined following testing	To be determined following testing
VE (Kiln A/B Stk)	15% opacity	Typical BACT limit for scrubbers (PCS limit is 10%)
VE (Kiln C Stack)	15% opacity	Typical BACT limit for scrubbers (PCS limit is 10%)
VE (all baghouses)	5% opacity	Typical BACT limit for baghouses

III. RULE APPLICABILITY

The proposed project is subject to preconstruction review under the applicable provisions of Chapter 403, Florida Statutes, Chapters 62-212 and 62-4, Florida Administrative Code (F.A.C.), and 40 CFR 60. This facility is located in an area designated attainment for all criteria pollutants in accordance with F.A.C. Rule 62-275.400

The proposed project was reviewed under Rule 62-212.400(5), F.A.C., New Source Review (NSR) for Prevention of Significant Deterioration (PSD), because it will be a modification to a major stationary source resulting in a significant increase in fluoride, particulate matter, sulfur dioxide and nitrogen oxides emissions. This review consisted of a determination of Best Available Control Technology (BACT) and an analysis of the air quality impact of the increased emissions. The review also includes an analysis of the project's impacts on soils, vegetation and visibility, along with air quality impacts resulting from associated commercial, residential and industrial growth.

The emission units affected by this PSD permit shall comply with all applicable provisions of the Florida Administrative Code and, specifically, the following Chapters and Rules:

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Chapter 62-4	Permits.
Rule 62-204.220	Ambient Air Quality Protection
Rule 62-204.240	Ambient Air Quality Standards
Rule 62-204.260	Prevention of Significant Deterioration Increments
Rule 62-204.360	Designation of Prevention of Significant Deterioration Areas
Rule 62-204.800	Federal Regulations Adopted By Reference
Rule 62-210.200	Definitions
Rule 62-210.300	Permits Required
Rule 62-210.350	Public Notice and Comments
Rule 62-210.370	Reports
Rule 62-210.550	Stack Height Policy
Rule 62-210.650	Circumvention
Rule 62-210.700	Excess Emissions
Rule 62-210.900	Forms and Instructions
Rule 62-212.300	General Preconstruction Review Requirements
Rule 62-212.400	Prevention of Significant Deterioration
Chapter 62-213	Operation Permits for Major Sources of Air Pollution
Rule 62-296.320	General Pollutant Emission Limiting Standards
Rule 62-297.310	General Test Requirements
Rule 62-297.400	Compliance Test Methods

It is worth noting that when the Multifos plant was originally constructed in the mid-1970s, the maximum permitted production rate was 15 tons per hour vs. the current 30 tons per hour. Subsequent permits were issued for production rate increases without stating whether physical changes were involved. Nonetheless, these were modifications by virtue of the change in the method of operation causing a significant increase in actual emissions and consequently the plant should have undergone PSD review and a BACT determination in 1981 and again in 1995. A search of the Department's files reveals the following information:

- The applicant submitted a construction/modification permit application for the Multifos Plant on 02/28/77. The stated production rate of Multifos was 15 tons/hr. A construction permit (AC53-5132) was issued on 6/3/77. The maximum allowable emissions were 52.6 lbs F/day (2.2 lbs/hr) and 442 lbs PM/day (18.4 lbs/hr).
- The applicant submitted an operation/modification permit application on 02/19/81. The requested product rate was 49,200 lbs/hr (24.6 tons/hr). Air Construction Permit (AC53-40084) was issued on 05/18/81. The production rate was increased from 14 tons/hr to 25 tons/hr. The particulate emission limit was increased to 29.85 lbs/hr while the fluoride limit was increased to 4.2 lbs/hr.
- A construction permit (AC53-267287) issued on 06/23/95 increased the production rate from 25 tons/hr to 30 tons/hr. The fluoride limit remained at 4.2 lbs/hr (18.39 tons per year) while the prior two year actual fluoride emissions averaged 6.3 tons/hr. The Department also issued an Air Operation Permit on 6/23/95 with the same F and PM limits.

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The following table presents data from Annual Operating Reports (AOR).

AOR REPORTED DATA					
Year	Annual Hours of Operation	Annual Production Rate (Tons)	Annual Production Limit (Tons)	Fluoride Emissions (Tons/yr)	Particulate Emissions (Tons/yr)
1988	7636	89800	219000	9.1	62.0
1989	8760	116000	219000	13.23	71.0
1990	8760	148000	219000	10.95	83.26
1991	8598	134000	219000	7.29	60.14
1992	8760	130000	219000	9.2	36.3
1993	8760	129880	219000	4.25	31.54
1994	8760	130111	219000	8.32	53.39
1995	8760	135529	219000	5.3	26.3
1996	8760	135268	219000	9.2	63.0
1997	8760	139014	219000	10.8	50.7

Controlled emissions of HF were estimated in the original application to be well over 10 tons per year just from the new kiln alone. Therefore, the expansion project, as originally proposed, was a major HAP source with respect to 40 CFR Part 63 - National Emission Standards for Hazardous Air Pollutants for Source Categories. The Department adopted provisions pursuant to Section 112(g) of the Clean Air Act implementing case-by-case Maximum Achievable Control Technology (MACT) determinations for construction/reconstruction of major sources of HAPs. Such a determination is required when the EPA has not yet issued or will not issue a standard reflecting MACT for a particular source category. The case-by-case process is described at 40 CFR 63.40-44. All of the applicable definitions and rules pursuant to Section 112(g) are reflected in the Department's rules at 62-204.800, F.A.C. The Department did not receive a case-by-case MACT application request in accordance with the above procedures. However, the Department's BACT determination, as drafted, is sufficiently strict to insure that the modification will not be a major source per 40 CFR Part 63.

IV. AIR QUALITY IMPACT ANALYSIS

A. Air Quality Analysis

The proposed project will increase emissions of the following pollutants at levels in excess of PSD significant amounts: F, PM/PM₁₀, SO₂ and NO_x. PM₁₀, SO₂ and NO_x are criteria pollutants and have national and state ambient air quality standards (AAQS), PSD increments, and significant impact levels defined for them. F is a non-criteria pollutant and has no AAQS, PSD increments or significant impact levels defined for it; therefore, no air quality dispersion modeling was done for

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fluoride. Instead, the BACT determination will establish F emission limits for this project. The PSD regulations require the following air quality analyses for this project:

- * An analysis of existing air quality for PM₁₀, SO₂ and NO_x;
- * A significant impact analysis for PM₁₀, SO₂ and NO_x;
- * A PSD increment analysis for PM₁₀, SO₂ and NO_x;
- * An Ambient Air Quality Standards (AAQS) analysis for PM₁₀, SO₂ and NO_x;
- * An analysis of impacts on soils, vegetation, and visibility and of growth-related air quality modeling impacts

The analysis of existing air quality generally relies on preconstruction monitoring data collected with EPA-approved methods. The significant impact, PSD increment, and AAQS analyses depend on air quality dispersion modeling carried out in accordance with EPA guidelines.

Based on the required analyses, the Department has reasonable assurance that the proposed project, as described in this report and subject to the conditions of approval proposed herein, will not cause or significantly contribute to a violation of any AAQS or PSD increment. However, the following EPA-directed stack height language is included: "In approving this permit, the Department has determined that the application complies with the applicable provisions of the stack height regulations as revised by EPA on July 8, 1985 (50 FR 27892). Portions of the regulations have been remanded by a panel of the U.S. Court of Appeals for the D.C. Circuit in NRDC v. Thomas, 838 F.2d 1224 (D.C. Cir. 1988). Consequently, this permit may be subject to modification if and when EPA revises the regulation in response to the court decision. This may result in revised emission limitations or may affect other actions taken by the source owners or operators." A discussion of the required analyses follows.

B. Analysis of Existing Air Quality and Determination of Background Concentrations

Preconstruction ambient air quality monitoring is required for all pollutants subject to PSD review unless otherwise exempted or satisfied. This monitoring requirement may be satisfied by using previously existing representative monitoring data, if available. An exemption to the monitoring requirement may be obtained if the maximum air quality impact resulting from the projected emissions increase, as determined by air quality modeling, is less than a pollutant-specific de minimus concentration. In addition, if EPA has not established an acceptable monitoring method for the specific pollutant, monitoring may not be required.

If preconstruction ambient monitoring is exempted, determination of background concentrations for PSD significant pollutants with established AAQS may still be necessary for use in any required AAQS analysis. These concentrations may be established from the required preconstruction ambient air quality monitoring analysis or from previously existing representative monitoring data.

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These background ambient air quality concentrations are added to pollutant impacts predicted by modeling and represent the air quality impacts of sources not included in the modeling.

The table below shows that predicted PM₁₀ and NO_x impacts from the project are predicted to be less than the de minimus level; therefore, preconstruction ambient air quality monitoring is not required for this pollutant. However, a PM₁₀ background concentration value of 21 ug/m³ for all averaging times and a NO_x background concentration value of 12 ug/m³ were established for use in required AAQS analyses. Predicted SO₂ impacts are greater than the de minimus level. Therefore, an SO₂ background concentration of 11 ug/m³ for all averaging times was established from existing air quality data for use in the AAQS analysis required for SO₂.

**Maximum Project Air Quality Impacts for Comparison
to the De Minimus Ambient Levels.**

Pollutant	Avg. Time	Max Predicted Impact (ug/m ³)	De Minimus Level (ug/m ³)	Impact Greater Than De Minimus?
PM ₁₀	24-hour	9	10	NO
SO ₂	24-hour	14	13	YES
NO _x	Annual	14	1.17	NO

C. Models and Meteorological Data Used in the Significant Impact Analysis

The applicant and the Department used the EPA-approved Industrial Source Complex Short-Term (ISCST3) dispersion model to evaluate the pollutant emissions from the proposed project. The model determines ground-level concentrations of inert gases or small particles emitted into the atmosphere by point, area, and volume sources. The model incorporates elements for plume rise, transport by the mean wind, Gaussian dispersion, and pollutant removal mechanisms such as deposition. The ISCST3 model allows for the separation of sources, building wake downwash, and various other input and output features. A series of specific model features, recommended by the EPA, are referred to as the regulatory options. The applicant used the EPA recommended regulatory options. Direction-specific downwash parameters were used for all sources for which downwash was considered. The stacks associated with this project all satisfy the good engineering practice (GEP) stack height criteria.

Meteorological data used in the ISCST3 model consisted of a concurrent 5-year period of hourly surface weather observations and twice-daily upper air soundings from the National Weather Service (NWS) stations at Tampa International Airport, Florida (surface data) and Ruskin, Florida (upper air data). The 5-year period of meteorological data was from 1987 through 1991. These NWS stations were selected for use in the study because they are the closest primary weather stations to the study area and are most representative of the project site. The surface observations included wind direction, wind speed, temperature, cloud cover, and cloud ceiling.

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Since five years of data were used in ISCST3, the highest-second-high (HSH) short-term predicted concentrations were compared with the appropriate AAQS or PSD increments. For the annual averages, the highest predicted yearly average was compared with the standards. For determining the project's significant impact area in the vicinity of the facility and if there are significant impacts from the project on any PSD Class I area, both the highest short-term predicted concentrations and the highest predicted yearly averages were compared to their respective significant impact levels.

D. Significant Impact Analysis

Initially, the applicant conducts modeling using only the proposed project's emissions. If this modeling shows significant impacts, further modeling is required to determine the project's impacts on the AAQS or PSD increments. The modeling used a discrete receptor grid representing the property boundary and receptor locations corresponding to a polar grid up to the most distant property boundary. From the property boundary on out from the facility eight receptor rings with 10 degree intervals (10-360 degrees) were placed at distances ranging from 7 km to 18 km from the facility, which is located in a PSD Class II area. Thirteen discrete receptors were set in the Chassahowitzka National Wilderness Area (CNWA) which is a PSD Class I area located approximately 103 km to the northwest of the project at its closest point. For each pollutant subject to PSD and also subject to PSD increment and/or AAQS analyses, this modeling compares maximum predicted impacts due to the project with PSD significant impact levels to determine whether significant impacts due to the project are predicted in the vicinity of the facility or in the CNWA. The tables below show the results of this modeling. Significant impacts were predicted in the Class II area in the vicinity of the project for all three pollutants. Therefore, further AAQS and PSD increment analyses in the vicinity of the project were required for this project. However, there were no significant impacts predicted in the CNWA Class I area for PM₁₀, SO₂ or NO_x; therefore, no further analyses were required in the Class I area.

**Maximum Project Air Quality Impacts for Comparison
to the PSD Class II Significant Impact Levels in the Vicinity of the Facility.**

Pollutant	Averaging Time	Maximum Predicted Impact (ug/m ³)	Significant Impact Level (ug/m ³)	Significant Impact?
SO ₂	Annual	0.9	1	NO
	24-hour	14	5	YES
	3-hour	45	25	YES
PM ₁₀	Annual	0.7	1	NO
	24-hour	9	5	YES
NO _x	Annual	1.17	1	YES

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Maximum Project Air Quality Impacts in the CNWA for Comparison to the PSD Class I Significant Impact Levels

Pollutant	Averaging Time	Maximum Predicted Impact (ug/m ³)	Significant Impact Level (ug/m ³)	Significant Impact?
SO ₂	Annual	0.007	0.1	NO
	24-hour	0.11	0.2	NO
	3-hour	0.55	1.0	NO
PM ₁₀	Annual	0.005	0.2	NO
	24-hour	0.09	0.3	NO
NO _x	Annual	0.009	0.1	NO

D. PSD Class II Increment Analysis

The PSD increment represents the amount that new sources in an area may increase ambient ground level concentrations of a pollutant from a baseline concentration which was established in 1977 (the baseline year was 1975 for existing major sources of SO₂) for SO₂ and 1988 for NO₂. The maximum predicted PSD Class II area PM₁₀, SO₂ and NO_x increments consumed by this project are shown below

PSD Class II Increment Analysis

Pollutant	Averaging Time	Maximum Predicted Impact (ug/m ³)	Impact Greater Than Allowable Increment?	Allowable Increment (ug/m ³)
SO ₂	24-hour	0.9	NO	91
	3-hour	14	NO	512
PM ₁₀	24-hour	28	NO	30
NO _x	Annual	2.6	NO	25

E. AAQS Analysis

For pollutants subject to an AAQS review, the total impact on ambient air quality is obtained by adding a "background" concentration to the maximum modeled concentration. This "background" concentration takes into account all sources of a particular pollutant that are not explicitly modeled. The results of the AAQS analysis for PM₁₀, SO₂ and NO_x are summarized in the table below. As shown in this table,

TECHNICAL EVALUATION AND PRELIMINARY

emissions from the proposed facility are not expected to cause or significantly contribute to a violation of any AAQS.

Ambient Air Quality Impacts

Pollutant	Averaging Time	Major Sources Impact (ug/m ³)	Background Conc. (ug/m ³)	Total Impact (ug/m ³)	Florida AAQS (ug/m ³)	Total Impact Greater Than AAQS?
SO ₂	24-hour	213	11	224	260	NO
	3-hour	603	11	614	1300	NO
PM ₁₀	24-hour	70	21	91	150	NO
Nox	Annual	7	12	19	100	NO

F. Additional Impacts Analysis

1. Impact Analysis Impacts On Soils, Vegetation, And Wildlife

The maximum ground-level concentrations predicted to occur from PM₁₀, SO₂ and NO_x emissions as a result of the proposed project, including background concentrations and all other nearby sources, will be below the associated AAQS. The AAQS are designed to protect both the public health and welfare. As such, this project is not expected to have a harmful impact on soils and vegetation in the PSD Class II area. As the results of the air dispersion modeling indicate an overall improvement in the ambient air impacts from the proposed project, no adverse impacts are expected on the air quality related values (AQRV) in the CNWA Class I area.

2. Impact On Visibility

Based on the results of the visibility analysis, the proposed project is not expected to have any impacts on visibility either near the facility or in the CNWA Class I area.

3. Growth-Related Air Quality Impacts

The proposed modification will require no increase in personnel to operate the plant. Also the increase in fertilizer production may cause a slight increase in delivery truck tanker traffic, but will have a negligible impact on traffic in the area as compared with traffic levels that presently exist. Therefore, no additional growth impacts are expected as a result of the proposed project.

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V. CONCLUSION

Based on the foregoing technical evaluation of the application and additional information submitted by IMC-Agrico Company, the Department has made a preliminary determination that the proposed project will comply with all applicable state air pollution regulations provided the Department's Best Available Control Technology Determination is implemented and certain conditions are met, including the required approval of the design of the new kiln. Also required is the Department's approval of the applicant's plan for emission control to avoid PSD significant emission increases, if that option is selected. The General and Specific Conditions are listed in the attached draft conditions of approval.

Permit Engineer: *John Reynolds*
Meteorologist: *Cleve Holladay*

Reviewed and Approved by A. A. Linero, P.E.
Administrator, New Source Review Section



Department of Environmental Protection

DRAFT

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

PERMITTEE:

IMC AGRICO COMPANY
3095 Highway 640
Mulberry, Florida 33860

File No.: 1050059-024-AC
Permit No.: PSD-FL-244
SIC No.: 2874
Project: Multifos Plant Expansion
Expires: September 30, 2000

PROJECT AND LOCATION:

Permit for the expansion/modification of the Multifos Plant by constructing a new 25 TPH kiln (Kiln C), pug mill, cooler, crusher, screens, mills and associated processing and air pollution control equipment at the IMC Agrico (New Wales) facility, 3095 Highway 640, Mulberry, Polk County, Florida. UTM Coordinates are Zone 17; 396.6 km E; 3078.9 km N.

STATEMENT OF BASIS:

This construction permit is issued under the provisions of Chapter 403 of the Florida Statutes (F.S.), and Chapters 62-4, 62-204, 62-210, 62-212, 62-296 and 62-297 of the Florida Administrative Code (F.A.C.). The above named permittee is authorized to modify the facility in accordance with the conditions of this permit and as described in the application, approved drawings, plans, and other documents on file with the Department of Environmental Protection (Department).

Appendices and attachments made a part of this permit:

Appendix BD	Best Available Control Technology Determination
Appendix CSC	Emission Unit(s) Common Specific Conditions
Appendix GC	Construction Permit General Conditions

Howard L. Rhodes, Director
Division of Air Resources
Management

"Protect, Conserve and Manage Florida's Environment and Natural Resources"

DRAFT**SECTION I. FACILITY INFORMATION****FACILITY DESCRIPTION**

The existing Multifos animal feed ingredient facility consists of a common mixed feed preparation section for feeding phosphate-containing material to two rotary defluorination kilns and associated processing and handling equipment. This permit is for an expansion project to increase the capacity of the existing 30 tons per hour plant to 55 tons per hour by installing a new kiln and higher capacity mixing equipment to prepare the feed material for all three kilns.

REGULATORY CLASSIFICATION

The Multifos plant is classified as a "Major or Title V Source" per Rule 62-210.200, F.A.C., Definitions, because emissions of at least one regulated air pollutant exceed 100 tons per year (TPY).

Phosphate processing plants are listed as a Major Facility Category in Table 62-212.400-1, F.A.C., "Major Facility Categories." Therefore, stack and fugitive emissions of over 100 TPY of a regulated pollutant are sufficient to classify the installation as a "Major Facility" per the definitions in Rule 62-210.200, F.A.C., subject to the Significant Emission Rates given in Table 62-212.400-2, F.A.C. and the requirements of Rule 62-212.400, F.A.C., Prevention of Significant Deterioration (PSD) and Best Available Control Technology (BACT).

PERMIT SCHEDULE:

- XX/XX/98 Notice of Intent published in _____
- 07/23/98 Distributed Intent to Issue Permit
- 05/21/98 Application deemed complete
- 12/01/97 Received Application

RELEVANT DOCUMENTS:

The documents listed below are the basis of the permit. They are specifically related to this permitting action but do not supersede the conditions given in the permit. These documents are on file with the Department.

- Application received December 1, 1997
- Department's letters dated December 16 and 31, 1997
- Comments from the National Park Service dated December 29, 1997
- Applicant's completeness responses dated March 5, April 15, April 23 and May 21, 1998
- Department's Intent to Issue dated July 23, 1998 and associated documents
- Applicant's comments dated August XX, 1998 on Department documents issued July 23, 1998
- Department's Final Determination accompanying permit

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SECTION II. EMISSION UNIT(S) GENERAL REQUIREMENTS

GENERAL AND ADMINISTRATIVE REQUIREMENTS

1. Regulating Agencies: All documents related to applications for permits to operate, reports, tests, minor modifications and notifications shall be submitted to the Department's Southwest District Office, 3804 Coconut Palm Drive, Tampa, Florida 33619-8218. All applications for permits to construct or modify an emissions unit(s) *subject to the Prevention of Significant Deterioration or Nonattainment (NA) review requirements* should be submitted to the Bureau of Air Regulation (BAR), Florida Department of Environmental Protection (FDEP), 2600 Blair Stone Road (MS 5505), Tallahassee, Florida 32399-2400 (phone number 850/488-0114).
2. General Conditions: The owner and operator is subject to and shall operate under the attached General Permit Conditions G.1 through G.15 listed in *Appendix GC* of this permit. General Permit Conditions are binding and enforceable pursuant to Chapter 403 of the Florida Statutes. [Rule 62-4.160, F.A.C.]
3. Emission Unit(s) Common Specific Conditions: The owner and operator is subject to and shall operate under the attached Emission Unit(s) Common Specific Conditions listed in *Appendix CSC* of this permit. The Emission Unit(s) Common Specific Conditions are binding and enforceable pursuant to Chapters 62-204 through 62-297 of the Florida Administrative Code.
4. Terminology: The terms used in this permit have specific meanings as defined in the corresponding chapters of the Florida Administrative Code.
5. Forms and Application Procedures: The permittee shall use the applicable forms listed in Rule 62-210.900, F.A.C. and follow the application procedures in Chapter 62-4, F.A.C. [Rule 62-210.900, F.A.C.]
6. Expiration: This air construction permit shall expire on September 30, 2000 [Rule 62-210.300(1), F.A.C.]. The permittee may, for good cause, request that this construction permit be extended. Such a request shall be submitted to the Bureau of Air Regulation prior to 60 days before the expiration of the permit. However, the permittee shall promptly notify the Department's Southwest District Office of any delays in completion of the project which would affect the startup day by more than 90 days. [Rule 62-4.090, F.A.C.]
7. Application for Title V Permit: An application for a Title V operating permit, pursuant to Chapter 62-213, F.A.C., must be submitted to the Department's Southwest District Office. [Chapter 62-213, F.A.C.]

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AIR CONSTRUCTION PERMIT 0570008-025-AC

SECTION III. EMISSION UNIT(S) SPECIFIC CONDITIONS

SPECIFIC CONDITIONS - MULTIFOS PRODUCTION PLANT:

The following Specific Conditions apply to the following emission units:

EMISSIONS UNIT NO.	EMISSIONS UNITS DESCRIPTION
030	Multifos Soda Ash Hopper Car Unloading System
031	Multifos Soda Ash Conveying System Baghouse
032	Multifos Kiln A Cooler Baghouse
033	Multifos Kiln B Cooler Baghouse
034	Multifos Plant Milling & Sizing West Baghouse
035	Multifos Plant Milling & Sizing East Baghouse
036	Multifos Production Plant
	Multifos Kiln C Cooler Baghouse
	Multifos Kiln C Milling & Sizing Baghouse
038	Multifos Milling & Sizing System Surge Bin Baghouse

1. The above emissions units shall comply with all applicable provisions of Chapter 62-296, Stationary Sources - Emission Standards, Florida Administrative Code (F.A.C.).
2. Emissions from the above emissions units shall not exceed the following limits (PM includes PM₁₀): [Rules 62-204.800(7)(b)10; 62-210.200; 62-212.400, F.A.C.]

POLLUTANT	EMISSION LIMIT	LIMIT BASIS
F (Kiln A/B Stack)	0.43 lb/hr	0.038 lb F/ton P ₂ O ₅ input to kilns
F (Kiln C Stack)	0.36 lb/hr	0.038 lb F/ton P ₂ O ₅ input to kiln
F (Feed Storage)	0.0005 lb/hr/ton equiv. P ₂ O ₅ stored	Equivalent to NSPS-Subpart X for TSP Storage
PM (Kiln A/B Stk)	17.0 lb/hr	1.50 lb/ton P ₂ O ₅ input to kilns
PM (Kiln C Stack)	14.3 lb/hr	1.50 lb/ton P ₂ O ₅ input to kilns
SO ₂ (Kiln A/B Stk)	10.4 lb/hr	98% Efficient Scrubber based on 4/9/98 test
SO ₂ (Kiln C Stack)	8.7 lb/hr	98% Efficient Scrubber based on 4/9/98 test
NO _x (Kiln A/B Stk)	To be determined following testing	To be determined following testing
NO _x (Kiln C Stack)	To be determined following testing	To be determined following testing
Metals (Kiln A/B/C)	To be determined following testing	To be determined following testing
VE (Kiln A/B Stk)	15% opacity	BACT limit for scrubbers
VE (Kiln C Stack)	15% opacity	BACT limit for scrubbers
VE (all baghouses)	5% opacity	BACT limit for baghouses

3. The throughput rate of the mixed feed preparation section of the Multifos plant (includes all equipment for processing and storing mixed feed) shall not exceed 60 tons per hour of raw materials. [Rule 62-210.200, F.A.C. (Definitions - Potential Emissions)]
4. The throughput rate of the kilns, screens, mills and product loadout section of the Multifos plant (includes all equipment for feeding materials to the kilns, all thermal processing equipment, coolers, crushers, screens, mills and associated materials storage and handling equipment) shall not exceed the following:

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SECTION III. EMISSION UNIT(S) SPECIFIC CONDITIONS

UNIT	MAXIMUM THROUGHPUT RATE
Kiln A	15 tons/hr (5.7 tons P ₂ O ₅ /hr)
Kiln B	15 tons/hr (5.7 tons P ₂ O ₅ /hr)
Kiln C	25 tons/hr (9.5 tons P ₂ O ₅ /hr)

5. The above emission units shall be allowed to operate continuously (8760 hours/year) [Rule 62-210.200, F.A.C. (Definitions - Potential Emissions)]
6. Except as provided below, the permittee shall install and operate a scrubber designed for 99.9+% removal of fluorides from the new kiln's exhaust gases (Kiln C). The permittee shall also install and operate a 98 percent efficient caustic scrubber downstream of each kiln's (Kiln A, B and C) fluoride scrubber for removal of SO₂ from the kiln exhaust gases. A new stack shall be installed for the exhaust from Kiln C and sampling stations and platforms installed for Kilns A and B emissions to be sampled independently. A change to another SO₂ control strategy shall not occur without the Department's review and approval and shall require submittal of a permit modification request to revise the Best Available Control Technology Determination. [Rules 62-4.070 and 62-212.400, F.A.C.]
7. If the permittee elects to avoid installing the high efficiency scrubbers required by the BACT determination listed above and instead elects to install air pollution control systems of lower efficiency and/or elects to operate at lower material throughput rates or for fewer hours to maintain emission levels below PSD-significant levels, the permittee must first notify the Department in writing of its decision and describe how it intends to comply with the maximum annual emission limits. If the Department approves the permittee's plan, the permittee shall be notified in writing within 15 days. Then, continuous emissions monitoring systems (CEMS) shall be installed, calibrated, maintained, operated and used to determine compliance with the following emissions limits and maximum annual emissions (CEMS shall be required for HF, opacity, and SO₂ emissions. In lieu of a monitor for NO_x, fuel input to Kilns A and B shall be limited to 32 MMBTU/hr for each kiln and the permittee shall submit drawings and design information to the Department for approval to provide reasonable assurance that the kiln is designed to emit less than 40 tons of NO_x per year).

POLLUTANT	EMISSION LIMIT	MAXIMUM ANNUAL EMISSIONS
F (Kiln A/B Stack)	2.96 lb/hr	13.0 tons per year (current actual)
F (Kiln C Stack)	0.55 lb/hr	2.4 tons per year (new emissions)
F (Feed Storage)	0.114 lb/hr	0.5 tons per year (new emissions)
PM (Kiln A/B Stk)	13.2 lb/hr	57.6 tons per year (current actuals)
PM (Kiln C Stack)	5.1/3.1 lb/hr	22.5/13.5 tpy PM/PM ₁₀ (90% of new emissions)
SO ₂ (Kiln A/B Stk)	271.9 lb/hr	1,191 tons per year (current actual)
SO ₂ (Kiln C Stack)	9.1 lb/hr	39.9 tons per year (new emissions)
NO _x (Kiln A/B Stk)	To be determined following testing	To be determined following testing
NO _x (Kiln C Stack)	To be determined following testing	To be determined following testing
Metals(Kilns A/B/C)	To be determined following testing	To be determined following testing
VE (Kiln A/B Stk)	20% opacity	Current limit
VE (Kiln C Stack)	15% opacity	Consistent with annual emission cap
VE (all baghouses)	5% opacity	Covers remaining 10% of new PM/PM ₁₀

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SECTION III. EMISSION UNIT(S) SPECIFIC CONDITIONS

Kiln feed rates in tons per hour shall also be measured and recorded continually. Emissions measured by the CEMS (except opacity) shall be calculated in units of pounds per hour.

The CEMS shall be installed and certified before the initial performance test and operated in compliance with 40 CFR 60, Appendix F, Quality Assurance Procedures (1996 version) or other Department-approved QA plan; 40 CFR 60, Appendix B, Performance Specification 2 (1996 version).

The CEMS shall be operated and shall record data at all operating hours when fuel is burned in the kilns, including periods of startup, shutdown, load change, continuous operation and malfunction. CEMS downtimes and excess emissions, which include startup emissions, shall be reported on a quarterly basis using the SUMMARY REPORT in 40 CFR 60.7. A detailed report of the cause, duration, magnitude, and corrective action taken or preventative measures adopted for each excess emission occurrence, and a listing of monitor downtime occurrences shall accompany the SUMMARY REPORT when the total corrective action taken or preventative measures adopted for each excess emission occurrence, and a listing of CEMS downtime occurrences shall accompany the SUMMARY REPORT when the total duration of excess emissions is 1% or greater or if the CEMS downtime is 5% or greater of the total monitored operating hours.

The CEMS device shall meet the applicable requirements of Chapter 62-204, F.A.C., 40 CFR 60, Appendix F, and 40 CFR 60.13, including certification of each CEMS in accordance with 40 CFR 60, Appendix B, Performance Specifications and 40 CFR 60.7(a)(5) Notification Requirements. Data on monitoring equipment specifications, manufacturer, type calibration and maintenance requirements, and the proposed location of each stack probe shall be provided to the Department for review at least 90 days prior to installation of a new CEMS. [Rule 62-4.070 (3) F.A.C and Rule 62-204.800, F.A.C.]

If the permittee elects to avoid the CEMS requirement by installing the high efficiency scrubbers specified in the BACT determination and listed above, the permittee shall provide reasonable assurance of compliance by maintaining a continuous written record (log) of the operating parameters for all scrubbers in the Multifos plant. At a minimum, the following information shall be manually recorded during each hour of operation: scrubber water flow rate, scrubber gas pressure drop, fan motor amperage, name of person recording the information. The log shall be maintained as required by Specific Condition No. 12 below. [Rule 62-4.070, F.A.C.]

- 8. The permittee shall install and operate a scrubber designed to remove 95% of the total fluoride emissions from the material curing that occurs in the mixed feed storage building. [Rule 62-4.070 and 62-212.400, F.A.C.]
- 9. The permittee shall construct and operate a recirculating scrubber water pond, basin, or equivalent scrubber water and solids settling facility for the above emission units and chemically adjust and maintain the pH of the scrubber water between 5.8 and 7.0. [Rules 62-4.070 and 62-296.400, F.A.C.]
- 10. Compliance with the emission limits for F, PM/PM₁₀, SO₂, NO_x and VE shall be determined using the following reference methods as described in 40 CFR 60, Appendix A (1996, version), adopted by reference in Chapter 62-204, F.A.C.

Method 13A/B Determination of Total Fluoride Emissions from Stationary Sources

Method 5 Determination of Particulate Emissions from Stationary Sources

Method 7E Determination of Nitrogen Oxides from Stationary Sources.

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SECTION III. EMISSION UNIT(S) SPECIFIC CONDITIONS

- Method 8** Determination of Sulfuric Acid Mist and Sulfur Dioxide Emissions from Stationary Sources.
- Method 9** Visual Determination of the Opacity of Emissions from Stationary Sources.

In addition to the test methods specified above, as part of the performance testing requirements, a special test for metals emissions shall be conducted for each kiln according to the following reference method as described in 40 CFR 60, Appendix A cited above.

- Method 29** Determination of Metals Emissions from Stationary Sources

The above emissions units shall comply with all applicable requirements of Rule 62-297.310, F.A.C. General Test Requirements and 40 CFR 60.8 Performance Tests.

11. Testing of emissions shall be conducted with the emissions units operating at permitted capacity, which is defined as 90-100% of the maximum operating rate allowed by the permit. If it is impracticable to test at permitted capacity, then the unit may be tested at less than 90% of the maximum operating rate allowed by the permit; in this case, subsequent source operation is limited to 110% of the test load until a new test is conducted. Once the unit is so limited, then operation at higher capacities is allowed for no more than fifteen consecutive days for the purpose of additional compliance testing to regain the permitted capacity in the permit. [Rules 62-204.8(5), 62-297.310, 62-297.400, 62-297.401, F.A.C., and 40 CFR 60 Appendix A and 40 CFR 60.8, Subpart A].
12. This facility shall maintain a central file containing all measurements, records, and other data that are required to be collected pursuant to this permit. Operators shall keep a daily operation and maintenance log to include, at a minimum, calibration logs for all instruments, maintenance/repair logs for any work performed on equipment or instruments, all measurements, records, and any other data required to be maintained by the permittee shall be retained for at least five (5) years following the data on which such measurements, records, or data are recorded. These data shall be made available to Department staff upon request. The Department shall be notified in writing at least 15 days prior to any emissions testing or auditing of any instrument required to be operated by these specific conditions in order to allow witnessing by authorized personnel. [Rule 62-4.070(3), F.A.C.]
13. Plant and emission control equipment operating parameters determined during compliance testing and/or inspection that will establish the proper operation of each emissions unit shall be included in the Title V permit. [Rule 62-297.310, F.A.C. and 62-4.070(3), F.A.C.]
14. All fuel burning equipment in the Multifos plant shall be fired with natural gas unless it is not available, in which case only new No. 2 fuel oil having a maximum sulfur content of 0.5% (wt.) may be fired for up to 1,225 hours per year. Except as provided in Specific Condition No. 7 above, the maximum fuel firing rate of each kiln (Kiln A, B and C) shall be 56 MMBTU/hr. [Rule 62-210.200, F.A.C.]
15. The permittee shall install, calibrate, maintain, and operate a monitoring device which can be used to determine the mass flow of phosphorus-bearing feed material to the process. The monitoring device shall have an accuracy of ± 5 percent over its operating range. The permittee shall maintain a daily record of equivalent P_2O_5 feed by first determining the total mass rate in metric ton/hour of phosphorus bearing feed using the flow monitoring device meeting the requirements of 40 CFR 60.223(a) and then by proceeding according to 40 CFR 60.224(b)(3). [Rule 62-296.800, F.A.C.; 40 CFR 60.223(b)]

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SECTION III. EMISSION UNIT(S) SPECIFIC CONDITIONS

16. No person shall cause, suffer, allow, or permit the discharge of air pollutants which cause or contribute to an objectionable odor. [Rule 62-296.320, F.A.C.]
17. No person shall circumvent any air pollution control device, or allow the emission of air pollutants without the applicable air pollution control device operating properly. [Rule 62-210.650, F.A.C.]
18. The subject emissions units shall be subject to the following:
 - Excess emissions resulting from startup, shutdown or malfunction of any source shall be permitted providing (1) best operational practices to minimize emissions are adhered to and (2) the duration of excess emissions shall be minimized but in no case exceed two hours in any 24 hour period unless specifically authorized by the Department for longer duration. [Rule 62-210.700, F.A.C.]
 - Excess emissions which are caused entirely or in part by poor maintenance, poor operation, or any other equipment or process failure which may reasonably be prevented during startup, shutdown, or malfunction shall be prohibited. [Rule 62-210.700, F.A.C.]
 - Considering operational variations in types of industrial equipment operations affected by this rule, the Department may adjust maximum and minimum factors to provide reasonable and practical regulatory controls consistent with the public interest. [Rule 62-210.700, F.A.C.]
 - In case of excess emissions resulting from malfunctions, each source shall notify the Department or the appropriate Local Program in accordance with Rule 62-4.130, F.A.C. A full written report on the malfunctions shall be submitted in a quarterly report, if requested by the Department. [Rule 62-210.700, F.A.C.]
19. The permittee shall submit an Annual Operating Report using DEP Form 62-210.900(4) to the Department's Southwest District office by March 1 of the following year for the previous year's operation. [Rule 62-210.370, F.A.C.]

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IMC-Agrico Company (New Wales)
Multifos Plant Expansion - Kiln C
PSD-FL-244 / 1050059-024-AC
Mulberry, Polk County

The IMC-Agrico Company has applied to expand production capacity of its "Multifos" animal feed ingredient facility at the New Wales complex in Polk County by enlarging the capacity of the feed preparation section and installing a third rotary kiln (Kiln C) adjacent to the two existing Kilns A & B. Production capability will be increased by 83% from 30 tons of product per hour to 55 tons per hour with the new kiln producing 45% of the total output. As originally proposed by the applicant, the plant expansion would have resulted in a significant increase in emissions of particulate matter (PM/PM₁₀), fluorides (F) and sulfur dioxide (SO₂). After submitting the application, the applicant proposed a cap on the feed input rate (originally 9.5 tons P₂O₅ per hour and later reduced to 6.5 tons P₂O₅ per hour which is equivalent to 17.1 tons of feed per hour) along with the installation of a scrubber for the new kiln to allow it to escape PSD review for SO₂. A similar restriction on fuel oil consumption was later proposed to circumvent PSD review for oxides of nitrogen (NO_x).

Based on the average actual multifos production rate of 137,141 tons per year for 1996/97 (vs. 262,800 tons allowed), the actual emissions of NO_x from the existing kilns total around 36 tons per year if no fuel oil is used. This is obtained by applying the AP-42 NO_x emission factor of 140 lb per million cubic feet for natural gas combustion in industrial boilers since a better emission factor is not available (the applicant submitted a lower factor based on another plant but the accuracy of that figure could not be verified). On the same basis, the rock dryer emits at least 4.0 tons per year for a total actual emission level of at least 40 tons per year from the process if no fuel oil is fired. This yields a NO_x emission factor of 0.58 lb NO_x per ton product (1.53 lb per ton P₂O₅). When applied to the proposed capped tonnage of 149,796 tons per year for the new kiln, the projected NO_x emissions for gas firing alone are 43.4 tons per year which is above the PSD significance threshold of 40 tons per year. Since the applicant's proposed feed rate cap does not allow the applicant to escape PSD review, the originally requested feed rates will be used.

The expansion will subject the two existing kilns as well as the new kiln to PSD review because the expansion involves physical and operational changes upstream of the kilns that are integral to the planned increase in capacity and will increase the plant-wide potential to emit. The common feed preparation section including the rock dryer will experience an 83% increase in material throughput and fuel consumed, thus increasing emissions from the common equipment. The new larger pug mill will feed all three kilns which are normally operated together using the common feed system. The new kiln and pug mill are considered as debottlenecking modifications allowing an increased potential to emit for the entire plant (including the two existing kilns). Operation of the existing kilns at their current allowable annual capacity of 262,800 tons of product per year (99,864 tons P₂O₅) vs. their past actual annual capacity of 137,141 tons of product per year (52,114 tons P₂O₅) will result in an increase of 1,091 tons of SO₂ per year based on an emission factor of 45.7 lb SO₂/ton P₂O₅ determined from a test conducted in April of this year.

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The project is therefore subject to Prevention of Significant Deterioration (PSD) review for F (as HF), PM/PM₁₀, SO₂ and NO_x in accordance with Rule 62-212.400, Florida Administrative Code (F.A.C.). A Best Available Control Technology (BACT) determination is part of the review required by Rules 62-212.400 and 62-296, F.A.C. A BACT determination for metals will be required if indicated by the performance test data. If required, the BACT determination for lead and/or mercury will be completed by the Department within 45 days following receipt of the test data.

PROCESS EMISSIONS

The Multifos Plant calcines a mixture of phosphoric acid, soda ash and phosphate rock at about 2700-2800°F to produce a defluorinated animal feed supplement. Known pollutant emissions from the process are indicated below in tons per year. (No information is available on metal emissions such as chromium, mercury, lead, and nickel that are present in the rock):

Pollutant	PSD Level ¹	Actual Emissions ²	Current Allowables	New Emissions	Net Change	Subject to PSD Review?
F	3	13.0	14.8	1.8+10.5 ³	12.3 ³	Yes
PM	25/15 ⁵	57.6	130.7	73.1+84.7 ³	157.8 ³	Yes
NO _x	40	40+	N/A	39 ³ /100 ⁴	60.0 ⁴	Yes
SO ₂	40	1,191	N/A	39 ³ /2,993 ⁴	1,802 ⁴	Yes
CO	100	8.9	N/A	6.5 ³	6.5 ³	No
VOC	40	1.5	N/A	1.0 ³	1.0 ³	No
Metals	-	-	N/A	-	-	T.B.D. ⁶
VE	N/A	17%	20%	20% ³	N/A	N/A

¹ Tons per year (Rule 212.400, F.A.C.).

² Calculated by DEP based on two-year average using 1998 and 1997 compliance data for F and PM/PM₁₀; 1997/1996 average actual tonnage times 1998 test result for SO₂; emission factor times 1997/1996 average actual tonnage for NO_x, CO and VOC emissions.

³ Proposed by applicant as additional allowable emissions (adjusted by annual emission cap).

⁴ Potential new uncontrolled emissions (includes operating existing kilns at permitted rate).

⁵ PM/PM₁₀.

⁶ To be determined after performance testing due to lack of data.

DATE OF RECEIPT OF COMPLETE BACT APPLICATION:

May 21, 1998

BACT DETERMINATION PROCEDURE:

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In accordance with Chapter 62-212, F.A.C., this BACT determination is based on the maximum degree of reduction of each pollutant emitted which the Department of Environmental Protection (Department), on a case by case basis, taking into account energy, environmental and economic impacts, and other costs, determines is achievable through application of production processes and available methods, systems, and techniques. In addition, the regulations state that, in making the BACT determination, the Department shall give consideration to:

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

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

The air pollutant emissions from this facility can be grouped into categories based upon the control equipment and techniques that are available to control emissions from these emission units. Using this approach, the emissions can be classified as indicated below:

- *Fluorides* (primarily HF). Controlled generally by scrubbing with pond water.
- *Particulate Matter* (PM, PM₁₀). Controlled generally by wet scrubbing or filtration.
- *Combustion Products* (SO₂, NO_x). NO_x controlled generally by good combustion of clean fuels. SO₂ controlled generally by scrubbing when quantities are substantial.
- *Products of Incomplete Combustion* (CO, VOC). Controlled generally by proper combustion.

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- *Metals* (Cr, Hg, Pb, Ni, Cd). Controlled generally by scrubbing, filtration or other processes.

Grouping the pollutants in this manner facilitates the BACT analysis because it enables the pollutant control equipment and the corresponding energy, economic, and environmental impacts to be examined on a common basis. Although all of the pollutants addressed in the BACT analysis may be subject to a specific emission limiting standard as a result of PSD review, the control of "non-regulated" air pollutants is considered in imposing a more stringent BACT limit on a "regulated" pollutant (i.e., PM, SO₂, H₂SO₄, fluorides, etc.), if a reduction in "non-regulated" air pollutants can be directly attributed to the control device selected as BACT for the abatement of the "regulated" pollutants.

BACT AND NON-BACT KILN EMISSION LIMITS PROPOSED BY APPLICANT:

POLLUTANT	EMISSION LIMIT	LIMIT BASIS	CONTROL TECHNOLOGY
F	3.50 lb/hr (kiln)	0.37 lb/ton P ₂ O ₅ input	Packed scrubber w/ untreated pond water
PM	20.00 lb/hr (kiln)	2.10 lb/ton P ₂ O ₅ input	Packed scrubber w/ pond water
PM	6.30 lb/hr (cooler)	0.02 gr/scf	Fabric Filter
PM	1.90 lb/hr (screens/mills)	0.02 gr/scf	Fabric Filter
SO ₂	8.90 lb/hr (kiln)	Escape PSD	Limit on production rate
NO _x	32.50 lb/hr (kiln)	Escape PSD	Limit on fuel oil usage
VE	Exemption Requested	-	Same as PM

BACT POLLUTANT ANALYSIS

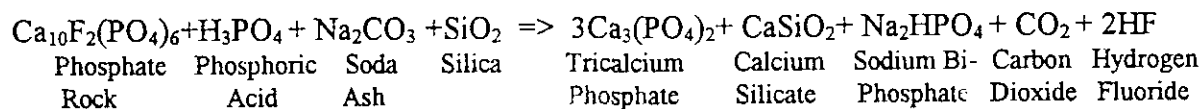
GASEOUS FLUORIDES (HF)

The demand for defluorinated phosphates as an animal feed supplement, primarily for cattle, poultry, and hogs, began as a result of the World War II shortage of bonemeal. It was found that the calcium and phosphorus needed in the animal diet could be obtained by treating phosphate rock, which typically contains 34-35% P₂O₅, to remove the 3.0 - 4.0% fluorine constituent. An early process involved calcining a mixture of phosphate rock and silica from the rock beneficiation process to remove the fluorine. Other defluorinated feed-grade phosphate products were later produced by defluorinating the phosphoric acid before reacting it with limestone or ammonia. Another process involved reacting phosphate rock with sulfuric acid to form "normal" or "single" superphosphate which was heated sufficiently to volatilize the fluorine while the mono and dicalcium phosphate compounds were being converted to tricalcium phosphate. As process refinements evolved, soda ash (sodium carbonate) was mixed with wet process phosphoric acid and phosphate rock in a pug mill to produce a triple superphosphate (3 moles of soluble phosphate formed per mole of insoluble phosphate).

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For the multifos process (the applicant provided little process information and the literature contains only very sketchy details), the fundamental reactions are believed to be:



With respect to gaseous fluoride emissions, the pug mill acid/rock mixing and curing/storage steps resemble the triple superphosphate fertilizer process with its difficult air pollution problems. Run-of-pile triple superphosphate (ROP-TSP) plants employ a cone mixer for reacting phosphate rock with phosphoric acid. Inertial energy of the acid swirling through the cone provides power for mixing. Within 15-30 seconds after being discharged from the cone, the ROP-TSP mixture begins to solidify as the reactions proceed while being transported on a slow-moving enclosed conveyor called a "den". As the material moves along on the way to the curing building, rapid evolution of fluoride-containing gases occurs, requiring scrubbing to remove fluorides. Triple superphosphate plants typically have to control fluorides from the curing/storage building as well as the mixing area.

Instead of the mixing cone and den, the multifos plant uses a pug mill which is a device with rotating counter-opposed blades mounted on long shafts and designed to propell the material along while "milling" it at the same time. As with ROP-TSP, fluoride evolution continues in the material storage building as the curing phase progresses. The quantity of fluoride generated in the storage building is substantial. Emissions from storage of triple superphosphate amount to about 12% of the total fluoride emitted by the process, thus requiring a separate scrubbing system. No mention of storage building fluoride emissions was made by the applicant, although the applicant has proposed to evacuate the new pug mill to the new fluoride scrubber.

The majority of the fluoride is emitted as hydrogen fluoride (HF) as the mixed feed is heated to 2,700-2,800°F in the kilns. Thus, the major sources of fluoride emissions for the multifos process are the pug mill, storage building and kilns. Additional fluoride emissions are generated in the cooler, however, these are typically low and do not require separate fluoride scrubbing.

PARTICULATE MATTER (PM/PM₁₀) AND VISIBLE EMISSIONS (VE)

The sources of PM and VE are the rock dryer and associated conveying equipment, the kilns coolers, crushers, screens and mills. These emissions are controlled by cyclones, baghouses and scrubbers. The applicant has proposed that baghouses be installed for controlling PM/PM₁₀ emissions from the cooler, crusher, screens and mills and that the existing control equipment for the kilns be considered as BACT.

SULFUR DIOXIDE (SO₂)

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Emissions of SO₂ result from the sulfur content of the phosphate rock as it is heated and oxidized in the kiln. The amount resulting from sulfur in the fuel is relatively low. The applicant has proposed the installation of a 97% efficient caustic scrubber as BACT.

NITROGEN OXIDES (NOX)

NOx emissions occur as a result of the oxidation of nitrogen in the air and fuel during the fuel combustion process for the rock drying section and the kilns. Add-on equipment for NOx control would not be feasible or cost-effective for this process. Options for control must focus on the kiln and burner design to prevent excessive NOx formation rather than removal.

METALS

The extent of metals emissions from this process is not known. Metals (Cr, Hg, Pb, Ni, Cd) emissions will be determined by additional stack tests performed during the performance testing phase. If the need for additional control is indicated by the test results, a proper determination will be completed within 45 days of receipt of the test results.

BACT DETERMINATION BY THE DEPARTMENT:

FLUORIDES

Reliable uncontrolled/controlled emission factors for fluorides from kiln-type feed grade defluorinated phosphate processes are not widely available in the literature. A permit issued by the State of Virginia in 1985 for a similar facility operated by PCS Phosphates, Inc. (formerly Texasgulf Chemicals Company), in Saltville, Virginia, used an uncontrolled emission factor of 50 lb HF per ton feed and a controlled emission factor of 0.02 lb HF per ton feed. The controlled emission factor of 0.02 was lowered in 1993 to 0.012 lb/ton feed (0.038 lb/ton P₂O₅) following several years of test results showing that lower fluoride emissions were being achieved. The PCS plant uses two scrubbers in series with scrubber water pH controlled near 7.0 and a minimum pressure drop of 21.3 inches water gauge across the second scrubber. A double-alkali treatment system for SO₂ control maintains the neutrality of the scrubber water which results in a very high degree of fluoride removal (99.9+%) from the kiln gas stream.

The applicant has proposed that a crossflow scrubber identical to the two existing crossflow kiln scrubbers using untreated pond water be accepted as BACT for the new kiln. The crossflow scrubber itself is acceptable as BACT, but the pH of the applicant's pond water is far below acceptable levels for achieving fluoride removal efficiencies that are representative of best available control technology. Using the PCS test data and their uncontrolled emission factor of about 50 lb HF per ton feed along with an estimated equilibrium concentration based on published data, the mass transfer performance of the PCS system is approximated by the following:

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Data

Test Date	March 7, 1997
Kiln Feed Rate	15.5 tons/hr
Kiln Stack Gas Flow Rate	24,338 scfm
Kiln Stack Gas Temperature	167°F
Fluoride Stack Emission Rate	0.068 lb/hr
Fluoride Stack Concentration	0.939 ppmvd
Scrubber Water pH	7.0
Scrubber Pressure Drop	23 in. H ₂ O
Estimated F Concentration in H ₂ O	15-20 mg/L
Estimated Equilibrium (Gas Phase)*	0.08 mg. HF/m ³

* Source: Phosphates and Phosphoric Acid, by Pierre Becker, Marcel Dekker, Inc. 1989, p. 403

Analysis

50 lb HF/ton X 15.5 tons/hr = 775 lb HF/hr to scrubber
 775 lb/hr X 454 g/lb X 1000/60 = 5.9 (10⁶) mg HF/min to scrubber
 24,338 scf/min X 0.0283 = 688.8 m³/min
 Scrubber Inlet Concentration = 5.9(10⁶) / 688.8 = 8,565 mg HF/m³
 0.068 lb HF/hr X 454 g/lb X 1000/60 = 514.5 mg HF/min from scrubber
 Scrubber Outlet Concentration = 514.5/688.8 = 0.75 mg HF/m³
 Mass Transfer Units = ln[(8,565 - 0.08)/(0.75 - 0.08)] = 9.5

The mass transfer capability of the scrubbing system proposed by the applicant using untreated pond water can be approximated from compliance test data over the last few years. Fluoride test results for the applicant's two kilns (exhausting through a common stack) have varied from 1.8 (1995) to 3.2 lb/hr (1997) at material feed rates of about 22 - 25 tons/hr containing around 37% (wt.) P₂O₅. For this approximation, an average emission rate of 2.8 lb/hr will be used. Stack gas flow rates average around 53,000 scfm. The pH of the untreated pond water used for scrubbing is believed to vary from about 1.0 to 1.5, containing up to 11,500 mg F/L. For cold weather pond water temperatures, the equilibrium gas phase concentration would be near 1.0 mg/m³ for this highly acidic pond water. Applying the same uncontrolled emission factor as above, the cold-weather mass transfer capability of the applicant's scrubbing system is roughly:

50 lb HF/ton X 23 tons/hr = 1,150 lb HF/hr to scrubber
 1,150 lb/hr X 454 g/lb X 1,000/60 = 8.7(10⁶) mg HF/min to scrubber
 53,000 scf/min X 0.0283 = 1,500 m³/min
 Scrubber Inlet Concentration = 8.7(10⁶)/1,500 = 5,800 mg HF/m³
 2.8 lb HF/hr X 454 g/lb X 1,000/60 = 21,186 mg HF/min from scrubber
 Scrubber Outlet Concentration = 21,186/1,500 = 14.1 mg HF/m³
 Mass Transfer Units = ln[(5,800 - 1.0)/(14.1 - 1.0)] = 6.1

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This comparison shows that the applicant's pond water acidity is far too high to yield emissions representative of BACT for any high-fluoride emitting process. Without neutralization of the recycled pond water, it is not possible to achieve the 8+ mass transfer units (99.9+% efficiency) that is considered to be BACT for high-fluoride emitters. Chilling of the acidic scrubbing water to near freezing would lower the equilibrium fluoride concentration to around 0.2 vs. 1.0 mg/m³, but this alone would not bring the scrubber performance into the BACT range as shown below:

$$\begin{aligned} \text{Estimated Scrubber Emissions} &= 1.8 \text{ lb HF/hr} = 9.1 \text{ mg HF/m}^3 \\ \text{Mass Transfer Units} &= \ln[(5,800 - 0.2)/(9.1 - 0.2)] = 6.5 \end{aligned}$$

To achieve BACT-level mass transfer units, neutralization with adequate mixing and settling facilities will be required to reduce the fluoride content of the acidic pond water sufficiently to obtain an equilibrium concentration of 0.10 mg/m³ or less and an emission level representative of BACT for high-fluoride emitting processes:

$$\begin{aligned} \text{Estimated Scrubber Emissions} &= 0.4 \text{ lb HF/hr} = 2.0 \text{ mg HF/m}^3 \\ \text{Mass Transfer Units} &= \ln[(5,800 - 0.1)/(2.0 - 0.1)] = 8.0+ \end{aligned}$$

Use of once-through fresh water would achieve the highest level of fluoride removal but this option is not practical for operations where water conservation is required and plant water balance problems would result.

As indicated above, the applicant's proposed kiln fluoride emission limit of 0.37 lb F per ton P₂O₅ input is clearly not representative of BACT. Although this limit is listed as a "new plant" standard in Rule 62-296.403(1)(h), F.A.C., it was originally written into the rule over thirty years ago and thus reflects the early technology of scrubbing with unneutralized pond water. Since that time, use of neutralized water for scrubbing has been shown to achieve far greater reductions in fluoride emissions.

Fluoride emissions from the surface of the pond are classified as "fugitive emissions" and are included in the source's "potential to emit" by virtue of phosphoric acid plants being among the 28 PSD source categories subject to the 100 tons per year threshold for major sources. At a pH of 1.0, pond water can contain up to 12,000 mg F/L which can result in greater fluoride emissions from the pond surface than from a facility's scrubber stacks. Some phosphate plants routinely treat pond water to a pH of 3.0 - 3.5. At this pH the pond water will contain less than 200 mg/L fluoride and can be used as makeup for a dedicated scrubber pond.

A scrubber pond can be constructed by diking-off a ten-acre section of the existing pond to be used for scrubber water only. With neutralization of the kiln scrubber water in a dedicated scrubber pond, the calcium compounds (mainly dicalcium phosphate) will precipitate out along with additional calcium fluoride. Upon settling at a pH in the range of 5.8 to 7.0, the fluoride content of the clear neutralized water will be as low as 15-20 mg/L, equal to the quality of the scrubber water at PCS Phosphates' Virginia plant.

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Another justification for the separate scrubber pond is to prevent the introduction of sulfite and sulfate ions from the caustic scrubbers into the lower pH pond water recirculating system which would result in recovered SO₂ being stripped out in other facility emission units that use the lower pH pond water. Temperature control for the diked-off scrubber pond section should be possible with evaporative cooling and minimal spraying since hot process water discharges will not be flowing into the isolated scrubber section. Costs for the scrubber pond neutralization are estimated below based on using waste gypsum for dike construction (no added liner) and discharging effluent from the caustic scrubber into the scrubber pond:

Diking of Scrubber Pond (400 hrs. @ \$300/hr)	\$ 120,000
Additional Equipment & Piping	350,000
Associated Costs	<u>30,000</u>
Total Installed Cost (T.I.C.)	\$ 500,000
Lime Treatment (@ \$5.00/1000 gal.)	\$ 35,000
Operation & Maintenance (@ 8.4% of T.I.C.)	42,000
Depreciation & Financial Charges (@ 16.9% of T.I.C.)	<u>84,500</u>
Annual Cost	\$ 161,500

Treatment of the scrubber water will increase the driving force for absorption by an additional 3.0 to 3.5 mass transfer units which should result in an additional 2.5 lb/hr of fluoride removed for the two existing kiln scrubbers, 2.4 lb/hr for the new kiln scrubber, and 2.1 lb/hr for the feed storage building scrubber. The total fluoride reduction for the multifos plant is considered in the economic analysis since the project covers modifications affecting the existing kilns (for example, the new feed pug mill serves all three kilns). The estimated fluoride emission reduction from the surface of the pond due to neutralization is 8.4 tons/yr {10 acres x 4.6 lb F/acre-day (from Becker, 1989) x 365/2000}. This results in the following incremental cost effectiveness:

$$\begin{aligned} \text{F Removed} &= (7.0)(8760)/2000 + 8.4 = 39.1 \text{ tons/yr} \\ \text{Cost Effectiveness} &= \$161,500/39.1 = \$4,130/\text{ton} \end{aligned}$$

The low magnitude of HF emissions relative to their high potential environmental impact, due to their status as a HAP, justifies the consideration of higher fluoride cost effectiveness figures compared to the high tonnage pollutants such as SO₂ and NO_x. A typical cost effectiveness figure for Selective Catalytic Reduction (SCR) for NO_x control for combustion turbines is currently around \$4,000/ton NO_x removed. Information obtained from the State of Virginia indicates that a double-alkali absorber/regeneration process equivalent to the PCS facility, installed in a Florida phosphate plant, would have a cost effectiveness of about \$8,000 per ton of HF removed based on allocation of costs according to the relative quantities of HF and SO₂ in the gas stream.

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The fluoride scrubber for the mixed feed storage building is not required to have the mass transfer capability of the kiln scrubbers since the quantity of air flow necessary to evacuate the storage building results in relatively low scrubber inlet concentrations which in turn limits the approach to equilibrium that can be achieved in a cost-effective manner. For low concentration applications such as this, a low to medium-energy venturi scrubber using neutralized pond water can achieve up to 3.5 mass transfer units and therefore this technology is considered as BACT for the storage building.

PARTICULATE MATTER (PM/PM₁₀) AND VISIBLE EMISSIONS (VE)

The top-down approach for control of PM/PM₁₀ and VE identified the following BACT options:

1. High-energy (>30 in.w.c.) venturi scrubber or ionizing wet scrubber.
2. Medium-energy (15-30 in.w.c.) venturi scrubber.
3. Two packed scrubbers in series.

By imparting an electrical charge to particles in the gas stream, ionizing wet scrubbers are able to achieve removal efficiencies approaching that of higher energy venturi scrubbers without incurring the higher operating cost. Data obtained from a major supplier of packed scrubbers indicate efficiencies of greater than 97% for PM control in an ammoniation/granulation fertilizer plant. However, high energy venturis are the most effective for PM control. Since particulate removal is by inertial impaction, the removal efficiency of venturis is a direct function of the impaction energy imparted to the particle in the venturi throat and the particle size distribution of the dust in the gas stream. The problem is that impaction energy costs begin to rise exponentially, as efficiencies higher than 98-99% are approached, such that the cost effectiveness of high energy impaction devices usually becomes prohibitive beyond that point. The cost effectiveness of high energy scrubbing would likely be above \$40,000 per incremental ton of PM/PM₁₀ removed if the facility already has a scrubber of moderate efficiency, say 85-90%. On a non-incremental basis, however, assuming replacement of the existing scrubber with a high energy one, the cost effectiveness would drop to around \$8,000 per ton for PM removal in the 98-99% efficiency range.

Since the primary function of the crossflow scrubber is fluoride removal, PM/PM₁₀ control is secondary from a design standpoint. By employing a control device that removes the pollutant of most concern extremely well (F at 99+% efficiency) while at the same time removing another important pollutant respectably well (PM/PM₁₀ at 85-90%), the phosphate industry has typically been able to avoid having to install separate high energy, ultra high efficiency devices for BACT PM/PM₁₀ removal that might have been required if PM/PM₁₀ had been the only major pollutant involved.

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Characteristic of the existing multifos scrubbing system is that the first stage of PM/PM₁₀ scrubbing occurs in the plenum spray section as the kiln gases are cooled prior to entering the crossflow scrubber. Additional PM/PM₁₀ removal occurs at the inlet of the crossflow scrubber as a result of the large bank of spray nozzles designed to prevent dust from plugging the inlet of the packed section. Although hard data on particulate removal efficiencies of crossflow scrubbers are difficult to obtain, there are literature references citing PM removal efficiencies for a single crossflow scrubber of 95% for particles 3 microns and larger and as high as 20% removal of submicron particulate. Overall PM/PM₁₀ removal efficiencies have been estimated at about 85% for applications similar to this one. By employing two 85% PM-efficient packed scrubbers in series as proposed herein, the theoretical overall PM removal efficiency will be improved to above 95% which is equivalent or perhaps slightly better than that achievable by Option 2. VE at this level should be 10% or less, justifying a VE limit of 15% which is typical for recent BACT determinations.

SULFUR DIOXIDE (SO₂)

The top-down approach for SO₂ control identified the following BACT options:

1. Regenerable amine-based wet scrubbing.
2. Double-alkali wet scrubbing process.
3. Packed scrubber using caustic solution.

Regenerable amine based scrubbing recovers SO₂ at efficiencies above 99% and produces a salable or recyclable SO₂ product which makes it a suitable choice for certain applications where SO₂ concentrations are very high (above 8,000 ppm). A typical process is the dimethyl aniline (DMA) system which absorbs SO₂ into the DMA solution in a first stage absorption tower, then scrubs it with sodium carbonate solution in a second stage before third stage cleanup with dilute sulfuric acid to remove the last trace of DMA. DMA in the scrubbing solution is removed in a gravity separator and returned to the primary absorption tower. Water from the separator is used to make steam for regeneration of the primary absorber solution by driving off SO₂ which can be recovered or recycled depending on the situation. Final flue gas concentration is as low as 10 ppm SO₂.

Amine scrubbing is commonly applied in the smelting industry where high concentrations of SO₂ make it technologically and economically feasible. Advantages are the very high SO₂ recovery and the absence of a solid waste stream. However, for SO₂ concentrations in the range of 700 - 1,000 ppm, as with the multifos plant, the economics of installing a process involving complex absorption, stripping separation and recovery equipment are not cost effective. Cost estimates of \$10,000 per ton of SO₂ effectively rule out this option.

The system installed at the PCS Phosphates plant in Saltville, Virginia, uses a double alkali technology designed for dual removal of SO₂ and fluoride through reaction of soda ash or caustic

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soda and sodium sulfite to form sodium fluoride and sodium bisulfite. The system uses two scrubbers in series. The first is a horizontal spray baffled scrubber which removes the bulk of the pollutants, followed by a multi-port variable throat venturi operated at a pressure drop of 21-22 in. w.c. Sodium salts formed in the recovery are regenerated by treatment with lime which allows the impurities to precipitate out as calcium fluoride, calcium sulfite and calcium sulfate. A solid waste material is obtained following clarification and filtration steps. Radiant heat from the kiln is used to dry the waste before sending it to a landfill. SO₂ recovery is typically above 98% with this technology. Cost effectiveness for SO₂ control with double alkali technology is reported to be anywhere from \$4,000 per ton to \$8,000 per ton of SO₂ removed depending on stack gas concentration and regeneration system economics.

Caustic scrubbing has been widely applied for SO₂ recovery in several industries including pulp and paper manufacturing. Although very effective for removing SO₂ from a gas stream, caustic scrubbers generate a substantial amount of calcium sulfite waste which must be dealt with at additional cost. The waste issue can be the most important factor in selecting the best control option for a situation where the space and the means for treatment and/or disposal are not readily available. This problem does not appear to be the determining factor for a phosphate plant that already has the means to handle solid and liquid wastes.

Caustic scrubbing typically involves a countercurrent packed tower with sodium hydroxide solution (usually 50% NaOH) fed to the top of the tower. Some processes use a two-stage configuration, with strong caustic being fed to the first stage and weak caustic to the second as a polishing step. The weak solution is then used as makeup for the first stage of the scrubber. Heat of solution from the caustic makeup is removed in a heat exchanger to keep the temperature of the scrubber solutions from rising. A purge stream containing about 10% (wt.) sodium bisulfite is pumped from the first stage of the packed tower to a treatment tank where it reacts with a mixture of lime and calcium chloride before flowing to the clarifier. The calcium sulfite sludge settles out in the clarifier and can be dewatered or filtered prior to disposal. The clarifier overflow is discharged to the facility's water treatment system.

For the multifos plant, cost estimates show that caustic scrubbing provides the most cost-effective option. The approximate cost of installing three identical 98 percent efficient caustic scrubbers and associated equipment for the multifos plant is listed below:

Caustic SO ₂ Scrubbers (30 ft. x 7 ft dia. FRP)	\$ 980,000
Replacement Fans	275,000
New 100 ft Stack for Kiln C	100,000
Ducts	150,000
Pumps, Tanks, Piping	240,000
Instruments, Electrical	130,000
Freight & Taxes	113,000
Subtotal Equipment	\$1,988,000

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Site preparation	20,000
Engineering	40,000
Contingency	300,000
Total Installed Cost	\$ 2,348,000
Operation & Maintenance (Annual Costs)	\$ 300,000
Chemicals & Handling	1,100,000
Depreciation	397,000
Other Indirect Costs	100,000
Total Annual Cost	\$ 1,897,000
Cost effectiveness = \$1,897,000/ 2,993 = \$634/ton SO ₂ Removed	

NITROGEN OXIDES (NO_x)

The formation of NO_x occurs in the kiln and dryer as a result of the oxidation of nitrogen in the atmosphere and, to a lesser extent, the nitrogen in the fuel. The so-called "thermal NO_x" forms as a result of the high combustion zone temperature (2,700-2,800° F). Factors affecting the amount of NO_x formed include residence time in the combustion zone, the oxygen level in the kiln, whether the kiln is designed to use secondary combustion air, and the heat release characteristics of the burner. Perhaps most important among these factors is the combustion temperature and the amount of excess air used by the burner. Higher excess air generally results in higher NO_x emissions. Adjustment of excess air to the burner is more difficult as the grade of fuel used drops, natural gas being the easiest flame to stabilize at low excess air. As there are no technologically feasible cost-effective downstream add-on control devices for NO_x emissions from this process, the BACT determination must focus on the options available for the design of the kiln and burner, such as indirect firing or low excess air burners. The applicant should be certain that the design of the new kiln is based on the lowest achievable NO_x emissions. Since no NO_x test data are available for the applicant's kilns, the BACT determination for NO_x will be completed following the receipt of the performance test data.

The following emission limits are established employing the top-down BACT approach:

POLLUTANT	EMISSION LIMIT	LIMIT BASIS
F (Kiln A/B Stack)	0.43 lb/hr	0.038 lb F/ton P ₂ O ₅ input to kilns (PCS limit basis)
F (Kiln C Stack)	0.36 lb/hr	0.038 lb F/ton P ₂ O ₅ input to kiln (PCS limit basis)
F (Feed Storage)	0.0005 lb/hr/ton equiv. P ₂ O ₅ stored	Equivalent to NSPS-Subpart X for TSP Storage
PM (Kiln A/B Stk)	17.0 lb/hr	1.50 lb/ton P ₂ O ₅ input to kilns (PCS limit basis)
PM (Kiln C Stack)	14.3 lb/hr	1.50 lb/ton P ₂ O ₅ input to kilns (PCS limit basis)
SO ₂ (Kiln A/B Stk)	10.4 lb/hr	98% Efficient Scrubber based on 4/9/98 test
SO ₂ (Kiln C Stack)	8.7 lb/hr	98% Efficient Scrubber based on 4/9/98 test
NO _x (Kiln A/B Stk)	To be determined following testing	To be determined following testing
NO _x (Kiln C Stack)	To be determined following testing	To be determined following testing
MtIs (Kilns A/B/C)	To be determined following testing	To be determined following testing
VE (Kiln A/B Stk)	15% opacity	Typical BACT limit for scrubbers (PCS limit is 10%)
VE (Kiln C Stack)	15% opacity	Typical BACT limit for scrubbers (PCS limit is 10%)
VE (all baghouses)	5% opacity	Typical BACT limit for baghouses

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These limits are sufficiently stringent to insure that the expansion project, after BACT has been applied, will not be subject to the National Emission Standards for Hazardous Air Pollutants for Source Categories, 40 CFR Part 63, requiring a case-by-case Maximum Achievable Control Technology (MACT) determination as described at 40 CFR 63.40-44.

COMPLIANCE

Compliance with the fluoride limit shall be in accordance with the EPA Reference Method 13A or 13B as contained in 40 CFR 60, Appendix A.

Compliance with the PM/PM₁₀ limit shall be in accordance with the EPA Reference Method 5 as contained in 40 CFR 60, Appendix A.

Compliance with the SO₂ limit shall be in accordance with the EPA Reference Method 8 as contained in 40 CFR 60, Appendix A.

Compliance with the NO_x limit shall be in accordance with the EPA Reference Method 7E as outlined in 40 CFR 60, Appendix A.

Compliance with the visible emission limit shall be in accordance with the EPA Reference Method 9 as contained in 40 CFR 60, Appendix A.

DETAILS OF THE ANALYSIS MAY BE OBTAINED BY CONTACTING:

John Reynolds, Permit Engineer
Department of Environmental Protection
Bureau of Air Regulation - MS 5505
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Recommended By:

Approved By:

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

Howard L. Rhodes, Director
Division of Air Resources Management

Date:

Date:

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EMISSION UNIT(S) COMMON SPECIFIC CONDITIONS

SUBSECTION 1.0 CONSTRUCTION REQUIREMENTS

- 1.1 Applicable Regulations: Unless otherwise indicated in this permit, the construction and operation of the subject emission unit(s) shall be in accordance with the capacities and specifications stated in the application. The facility is subject to all applicable provisions of Chapter 403, F.S and Florida Administrative Code Chapters 62-4, 62-103, 62-204, 62-210, 62-212, 62-213, 62-296, 62-297; and the applicable requirements of the Code of Federal Regulations Section 40, Part 60, adopted by reference in the Florida Administrative Code regulation [Rule 62-204.800 F.A.C.]. Issuance of this permit does not relieve the facility owner or operator from compliance with any applicable federal, state, or local permitting requirements or regulations. [Rule 62-210.300, F.A.C.]

SUBSECTION 2.0 EMISSION LIMITING STANDARDS

- 2.1 General Particulate Emission Limiting Standards. General Visible Emissions Standard: Except for emissions units that are subject to a particulate matter or opacity limit set forth or established by rule and reflected by conditions in this permit, no person shall cause, let, permit, suffer, or allow to be discharged into the atmosphere the emissions of air pollutants from any activity, the density of which is equal to or greater than that designated as Number 1 on the Ringelmann Chart (20% opacity). [Rule 62-296-320(4)(b)1, F.A.C.]
- 2.2 Unconfined Emissions of Particulate Matter [Rule 62-296.320(4)(c), F.A.C.]
- (a) The owner or operators shall not cause, let, permit, suffer or allow the emissions of unconfined particulate matter from any source whatsoever, including, but not limited to, vehicular movement, transportation of materials, construction, alteration, demolition or wrecking, or industrially related activities such as loading, unloading, storing or handling, without taking reasonable precautions to prevent such emission.
- (b) Any permit issued to a facility with emissions of unconfined particulate matter shall specify the reasonable precautions to be taken by that facility to control the emissions of unconfined particulate matter.
- (c) Reasonable precautions include the following:
- Paving and maintenance of roads, parking areas and yards.
 - Application of water or chemicals to control emissions from such activities as demolition of buildings, grading roads, construction, and land clearing.
 - Application of asphalt, water, oil, chemicals or other dust suppressants to unpaved roads, yards, open stock piles and similar activities.
 - Removal of particulate matter from roads and other paved areas under the control of the owner or operator of the facility to prevent reentrainment, and from buildings or work areas to prevent particulate from becoming airborne.

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- Landscaping or planting of vegetation.
- Use of hoods, fans, filters, and similar equipment to contain, capture and/or vent particulate matter.
- Confining abrasive blasting where possible.
- Enclosure or covering of conveyor systems.

NOTE: Facilities that cause frequent, valid complaints may be required by the Permitting Authority to take these or other reasonable precautions. In determining what constitutes reasonable precautions for a particular source, the Department shall consider the cost of the control technique or work practice, the environmental impacts of the technique or practice, and the degree of reduction of emissions expected from a particular technique or practice.

2.3 General Pollutant Emission Limiting Standards: [Rule 62-296.320, F.A.C.]

- (a) The owner or operator shall not store, pump, handle, process, load, unload or use in any process or installation, volatile organic compounds or organic solvents without applying known and existing vapor emission control devices or systems.
- (b) No person shall cause, suffer, allow or permit the discharge of air pollutants which cause or contribute to an objectionable odor.

NOTE: An objectionable odor is defined as any odor present in the outdoor atmosphere which by itself or in combination with other odors, is or may be harmful or injurious to human health or welfare, which unreasonably interferes with the comfortable use and enjoyment of life or property, or which creates a nuisance. [F.A.C. 62-210.200(198)]

SUBSECTION 3.0 OPERATION AND MAINTENANCE

3.1 Changes/Modifications: The owner or operator shall submit to the Permitting Authority(s), for review any changes in, or modifications to: the method of operation; process or pollution control equipment; increase in hours of operation; equipment capacities; or any change which would result in an increase in potential/actual emissions. Depending on the size and scope of the modification, it may be necessary to submit an application for, and obtain, an air construction permit prior to making the desired change. *Routine maintenance of equipment will not constitute a modification of this permit.* [Rule 62-4.030, 62-210.300 and 62-4.070(3), F.A.C.]

3.2 Plant Operation - Problems: If temporarily unable to comply with any of the conditions of the permit due to breakdown of equipment or destruction by fire, wind or other cause, the owner or operator shall notify the Permitting Authority as soon as possible, but at least within (1) working day, excluding weekends and holidays. The notification shall include: pertinent information as to the cause of the problem; the steps being taken to correct the problem and prevent future recurrence; and where applicable, the owner's intent toward reconstruction of destroyed facilities. Such notification does not release the permittee from any

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liability for failure to comply with the conditions of this permit and the regulations. [Rule 62-4.130, F.A.C.]

- 3.3 Circumvention: The owner or operator shall not circumvent the air pollution control equipment or allow the emission of air pollutants without this equipment operating properly. [Rules 62-210.650, F.A.C.]
- 3.4 Excess Emissions Requirements [Rule 62-210.700, F.A.C.]
- (a) Excess emissions resulting from start-up, shutdown or malfunction of these emissions units shall be permitted providing (1) best operational practices to minimize emissions are adhered to and (2) the duration of excess emissions shall be minimized, but in no case exceed two hours in any 24 hour period unless specifically authorized by the Permitting Authority office for longer duration. [Rule 62-210.700(1), F.A.C.]
 - (b) Excess emissions that are caused entirely or in part by poor maintenance, poor operation, or any other equipment or process failure that may reasonably be prevented during start-up, shutdown, or malfunction shall be prohibited. [Rule 62-210.700(4), F.A.C.]
 - (c) In case of excess emissions resulting from malfunctions, the owner or operator shall notify Permitting Authority within one (1) working day of: the nature, extent, and duration of the excess emissions; the cause of the problem; and the corrective actions being taken to prevent recurrence. [Rule 62-210.700(6), F.A.C.]
- 3.5 Operating Procedures: Operating procedures shall include good operating practices and proper training of all operators and supervisors. The good operating practices shall meet the guidelines and procedures as established by the equipment manufacturers. All operators (including supervisors) of air pollution control devices shall be properly trained in plant specific equipment. [Rule 62-4.070(3), F.A.C.]

SUBSECTION 4.0 MONITORING OF OPERATIONS

4.1 Determination of Process Variables

- (a) The permittee shall operate and maintain equipment and/or instruments necessary to determine process variables, such as process weight input or heat input, when such data is needed in conjunction with emissions data to determine the compliance of the emissions unit with applicable emission limiting standards.
- (b) Equipment and/or instruments used to directly or indirectly determine such process variables, including devices such as belt scales, weigh hoppers, flow meters, and tank scales, shall be calibrated and adjusted to indicate the true value of the parameter being measured with sufficient accuracy to allow the applicable process variable to be determined within 10% of its true value. [Rule 62-297.310(5), F.A.C.]

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EMISSION UNIT(S) COMMON SPECIFIC CONDITIONS

SUBSECTION 5.0 TEST REQUIREMENTS

- 5.1 Test Performance Within 60 days after achieving the maximum production rate at which these emission units will be operated, but not later than 180 days after initial startup and annually thereafter, the owner or operator of this facility shall conduct performance test(s) pursuant to 40 CFR 60.8, Subpart A, General Provisions and 40 CFR 60, Appendix A. No other test method shall be used unless approval from the Department has been received in writing. Unless otherwise stated in the applicable emission limiting standard rule, testing of emissions shall be conducted with the emission unit(s) operating at permitted capacity pursuant to Rule 62-297.310(2), F.A.C. [Rules 62-204.800, 62-297.310, 62-297.400, 62-297.401, F.A.C.]
- 5.2 Test Procedures shall meet all applicable requirements of the Florida Administrative Code Chapter 62-297. [Rule 62-297.310, F.A.C.]
- 5.3 Test Notification: The owner or operator shall notify the Permitting Authority in writing at least (30) days (initial) and 15 days (annual) prior to each scheduled compliance test to allow witnessing. The notification shall include the compliance test date, place of such test, the expected test time, the facility contact person for the test, and the person or company conducting the test. The (30) or (15) day notification requirement may be waived at the discretion of the Department. Likewise, if circumstances prevent testing during the test window specified for the emission unit, the owner or operator may request an alternate test date before the expiration of this window. [Rule 62-297.310 and 40 CFR 60.8, F.A.C.]
- 5.4 Special Compliance Tests: When the Department, after investigation, has good reason (such as complaints, increased visible emissions or questionable maintenance of control equipment) to believe that any applicable emission standard contained in Rule 62-204, 62-210, 62-212, 62-296 and 62-297, F.A.C. or in a permit issued pursuant to those rules is being violated, it may require the owner or operator of the facility to conduct compliance tests which identify the nature and quantity of pollutant emissions from the emissions units and to provide a report on the results of said tests to the Permitting Authority. [Rule 62-297.310(7)(b), F.A.C.]
- 5.5 Stack Testing Facilities: The owner or operator shall install stack testing facilities in accordance with Rule 62-297.310(6), F.A.C..
- 5.6 Exceptions and Approval of Alternate Procedures and Requirements: An Alternate Sampling Procedure (ASP) may be requested from the Bureau of Air Monitoring and Mobile Sources of the Florida Department of Environmental Protection in accordance with the procedures specified in Rule 62-297.620, F.A.C.
- 5.7 Operating Rate During Testing: Unless otherwise stated in the applicable emission limiting standard rule, testing of emissions shall be conducted with the emissions unit operation at permitted capacity. Permitted capacity is defined as 90 to 100 percent of the maximum operation rate allowed by the permit. If it is impracticable to test at permitted capacity, an emissions unit may be tested at less than the minimum permitted capacity; in this case, subsequent emissions unit operation is limited to 110 percent of the test load until a new

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test is conducted. Once the unit is so limited, operation at higher capacities is allowed for no more than 15 consecutive days for the purpose of additional compliance testing to regain the authority to operate at the permitted capacity. [Rule 62-297.310(2) and (3), F.A.C.]

SUBSECTION 6.0 REPORTS AND RECORDS

- 6.1 Duration: All reports and records required by this permit shall be kept for at least (5) years from the date the information was recorded. [Rule 62-4.160(14)(b), F.A.C.]
- 6.2 Emission Compliance Stack Test Reports:
- (a) A *test report* indicating the results of the required compliance tests shall be filed with the Permitting Authority as soon as practical, but no later than 45 days after the last sampling run is completed. [Rule 62-297.310(8), F.A.C.]
 - (b) The *test report* shall provide sufficient detail on the tested emission unit and the procedures used to allow the Department to determine if the test was properly conducted and if the test results were properly computed. At a minimum, the test report shall provide the applicable information listed in **Rule 62-297.310(8), F.A.C.**
- 6.3 Excess Emissions Report: If excess emissions occur, the owner or operator shall notify the Permitting Authority within (1) working day of: the nature, extent, and duration of the excess emissions; the cause of the excess emissions; and the actions taken to correct the problem. In addition, the Department may request a written summary report of the incident. Pursuant to the New Source Performance Standards, excess emissions shall also be reported in accordance with 40 CFR 60.7, Subpart A. [Rules 62-4.130 and 62-210.700(6), F.A.C.]
- 6.4 Annual Operating Report for Air Pollutant Emitting Facility: Before March 1st of each year, the owner or operator shall submit to the Permitting Authority this required report [DEP Form No. 62-210.900(5)], which summarizes operations for the previous calendar year. [Rule 62-210.370(3), F.A.C.]

SUBSECTION 7.0 OTHER REQUIREMENTS

- 7.1 Waste Disposal: The owner or operator shall treat, store, and dispose of all liquid, solid, and hazardous wastes in accordance with all applicable Federal, State, and Local regulations. This air pollution permit does not preclude the permittee from securing any other types of required permits, licenses, or certifications.

APPENDIX GC
GENERAL PERMIT CONDITIONS [F.A.C. 62-4.160]

- G.1 The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "Permit Conditions" and are binding and enforceable pursuant to Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.
- G.2 This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings or exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.
- G.3 As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey and vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit is not a waiver or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.
- G.4 This permit conveys no title to land or water, does not constitute State recognition or acknowledgment of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.
- G.5 This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.
- G.6 The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.
- G.7 The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at a reasonable time, access to the premises, where the permitted activity is located or conducted to:
- (a) Have access to and copy and records that must be kept under the conditions of the permit;
 - (b) Inspect the facility, equipment, practices, or operations regulated or required under this permit, and,
 - (c) Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.
- Reasonable time may depend on the nature of the concern being investigated.
- G.8 If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:
- (a) A description of and cause of non-compliance; and
 - (b) The period of noncompliance, including dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance.

APPENDIX GC
GENERAL PERMIT CONDITIONS [F.A.C. 62-4.160]

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

- G.9 In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is prescribed by Sections 403.73 and 403.111, Florida Statutes. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.
- G.10 The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.
- G.11 This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 62-4.120 and 62-730.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.
- G.12 This permit or a copy thereof shall be kept at the work site of the permitted activity.
- G.13 This permit also constitutes:
- (a) Determination of Best Available Control Technology (X);
 - (b) Determination of Prevention of Significant Deterioration (X); and
 - (c) Compliance with New Source Performance Standards ()
- G.14 The permittee shall comply with the following:
- (a) Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.
 - (b) The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application or this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.
 - (c) Records of monitoring information shall include:
 - 1. The date, exact place, and time of sampling or measurements;
 - 2. The person responsible for performing the sampling or measurements;
 - 3. The dates analyses were performed;
 - 4. The person responsible for performing the analyses;
 - 5. The analytical techniques or methods used; and
 - 6. The results of such analyses.
- G.15 When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.



Department of Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

P.E. Certification Statement

Permittee:

IMC-Agrico Company
Post Office Box 2000
Mulberry, Polk County

DEP File No. 1050059-024-AC (PSD-FL-244)
IMC-Agrico Lake Wales Facility

Project type:

Project to increase the production of Multifos, a defluorinated tricalcium phosphate with other iron and aluminum phosphates used as animal feed. Modifications will be made to the existing pre-processing and drying equipment. A new 25 tons per day kiln, cooler, screens, mills, and sizing equipment will be added. Best Available Control Technology (BACT) is: caustic scrubbing for control of sulfur dioxide; scrubbing in a cross flow packed scrubber using neutralized water for control of hydrogen fluoride (a hazardous air pollutant); baghouses for particulate matter from materials handling. A Maximum Achievable Control Technology determination was not required because the Department's Draft BACT determination will insure that emissions of hydrogen fluoride will be less than 10 tons per year. At this time it has not been established how the applicant will achieve BACT for nitrogen oxides emissions or limit emissions to less than 40 tons per year, thus avoiding a BACT requirement. The details must be submitted prior to final action on this permit per Rule 62-4.070(1), F.A.C.

I HEREBY CERTIFY that the engineering features (with the noted exception) described in the above referenced application and subject to the proposed permit conditions provide reasonable assurance of compliance with applicable provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Chapters 62-4 and 62-204 through 62-297. However, I have not evaluated and I do not certify aspects of the proposal outside of my area of expertise (including but not limited to the electrical, mechanical, structural, hydrological, and geological features).

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A. A. Linero, P.E.

Date

Registration Number: 26032

Department of Environmental Protection
Bureau of Air Regulation
New Source Review Section
111 South Magnolia Drive, Suite 4
Tallahassee, Florida 32301
Phone (850) 921-9523
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Review Engineer: John Reynolds

af 7/24