March 13, 1995

Mr. Al Linero, P.E.
Bureau of Air Regulation
Florida Department of Environmental Protection
2600 Blairstone Road
Tallahassee, Florida 32399-2400

Re: Cargill Fertilizer, Inc.
Bartow Nos. 4 and 5 Phosphoric Acid Plants
AC53-262532; PSD-FL-224

Dear Mr. Linero:

This letter is in follow up to our meeting with you and John Reynolds on March 1 regarding the above referenced permit application. At the meeting, it was agreed that Cargill would submit an analysis of fluoride (Fl) emissions data from the existing Bartow and Riverview phosphoric acid plants. The analysis would provide a projection of expected maximum Fl emissions from the proposed modified plants at Bartow.

The analysis of Fl emissions is presented in Attachment A. This analysis is based on a 95% confidence level to estimate Fl emissions which could be expected to actually occur. As presented in the attachment, the estimated Fl emissions after the proposed modification is 0.016 lb/ton P_2O_5 input.

Recognizing that Cargill must comply with any emission limit at all times and for all compliance tests, an emission limit based on average emissions is not acceptable. Considering this concern, the above analysis, and the Department's desire to set an achievable limit, Cargill proposes a Fl limit of 0.016 lb/ton P_2O_5 input (2.72 lb/hr, 11.91 TPY). This proposed limit is equal to the projected 95 percent confidence level potential emissions of 0.016 lb/ton.

Thank you for consideration of this information. Please call if you have any further questions concerning this requested permit change.

Sincerely,

David A. Buff

David, Buff, P.E.
Principal Engineer
Florida P.E. #19011

DAB/vjp
cc: David Jellerson
File (2)

cc: J. Reynolds
C. Halladay
J. Kisell, SWD
J. Novak, P.Co
J. Burnyak, NPS
J. Harper, EPA

SEAL

14393A/3

KBN ENGINEERING AND APPLIED SCIENCES, INC.

6241 Northwest 23rd Street, Suite 500, Gainesville, Florida 32653-1500, 904-336-5600 FAX 904-336-6603
5405 West Cypress Street, Suite 215, Tampa, Florida 33607, 813-287-1717 FAX 813-287-1716
1801 Clint Moore Road, Suite 105, Boca Raton, Florida 33487, 407-994-9910, FAX 407-994-9393
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1616 'P' Street N.W., Suite 450, Washington, D.C. 20036, 202-462-1100, FAX 202-462-2270

ATTACHMENT A

Following is an analysis of projected fluoride emissions from the Cargill Fertilizer, Inc., Bartow facility phosphoric acid (PA) production system following completion of proposed modifications.

1. Determine 95% confidence limit of current emissions.

   The permit application for the proposed new filter project at Bartow presented historic fluoride (Fl) test data for the plants (reference page A-15). As presented in Table 1 attached, the 95% confidence level for fluoride emissions based on compliance test averages is 0.31 lb F/hr for the #4 PA plant and 0.72 lb F/hr for #5 PA plant.

2. Calculate projected emissions at higher permitted rates.

   The permit application has requested a maximum allowable P_2O_5 input rate of 170 TPH. For this analysis it is assumed that the additional production will be proportioned between the two reactors according to the current permitted rates. The current permitted production rate for the #4 PA plant is 48 TPH P_2O_5 while the #5 PA plant has a permitted rate of 92 TPH P_2O_5. At the requested combined production rate of 170 TPH P_2O_5, it is assumed that the feed rates for the #4 and #5 reactors will be 58 TPH P_2O_5 and 112 TPH P_2O_5, respectively. Assuming that reactor emissions will increase in proportion to the increased rate (compared to tested conditions as shown in Table 1), the 95% Confidence Level emissions for the two reactors is calculated to be 0.53 lb F/hr for the #4 reactor (0.31 * 58 ÷ 34) and 1.06 lb F/hr for the #5 reactor (0.75 * 112 ÷ 79). This sums to a combined emission rate of 1.59 lb F/hr for the two reactors.

3. Determine expected emissions for the new filter.

   The new filter and proposed scrubber at Bartow will represent an additional source of fluoride emissions. The new filter scrubber will be similar to the new filter and scrubber installed at the Cargill Fertilizer, Riverview facility (Construction Permit AC29-186726). Therefore, emissions are expected to be similar. Table 2 shows a summary of stack test data for the Riverview filter along with the calculated 95% Confidence Limit of 1.13 lb F/hr. Since the

process rate during the Riverview testing was approximately 130 TPH P_2O_5, and the proposed process rate for Bartow is 170 TPH P_2O_5, this analysis is conservative (i.e. underestimates potential emissions from the new filter/scrubber).

4. Calculate projected emissions from newly evacuated clarifiers and acid storage tanks.

Tank emissions are assumed to be a function of the acid quality, temperature, air flows and surface area. The two types of tanks to be evacuated are the phosphoric acid clarifiers and the 30% acid storage tanks. It is assumed that the tanks at the Riverview and Bartow facilities are similar with respect to acid quality, temperature and air flow. Therefore, controlled emissions from the Bartow tanks can be projected from the Riverview data by adjusting for surface area.

Based on March 1994 data, emissions from the Riverview clarifier were 0.023 lb F/hr. This tank has a total surface area of 3,318.3 ft^2. This yields an emission factor of 3.88E-6 lb F/hr/ft^2. The total surface area of the clarifiers at the Bartow facility is equal to 3,772.9 ft^2 (including two small clarifier overflow tanks). Therefore, projected emissions from the Bartow clarifiers is estimated to be 0.0146 lb F/hr.

Similarly, based on March 1993 data, emissions from the Riverview 30% acid storage tank (300K gallon tank) is 0.0002 lb/hr. This tank has a surface area of 1,256.6 ft^2. The total surface area of the 30% acid storage tanks which are proposed to be newly evacuated at the Bartow facility is equal to 5,663.0 ft^2. Therefore, projected emissions from the Bartow storage tanks is estimated to be 0.0009 lb/hr.

5. Sum hourly emissions from all sources.

The projected total Fl emissions from the #4 and #5 PA plants after modification, at the 95% confidence level, is presented below.

Source	lb F/hr
#4 Reactor/filter	0.53
#5 Reactor/filter	1.06
New filter	1.13
Clarifiers	0.0146
Tanks	0.0009
TOTAL =	2.74

6. Convert hourly emission rate to emission based on production.

Using a projected emission rate of 2.74 lb F/hr and the proposed permitted production rate of 170 TPH P_2O_5, the emissions are calculated to be 0.016 lb F/ton P_2O_5.

Table 1. Current Fluoride Emissions - Cargill Bartow Plant

Test Date	Run #	Fluoride Emissions (lb F/ton P_2O_5)	Compliance Test Average (lb F/ton P_2O_5)	Process Rate (tons P_2O_5)
#4 Phosphoric Acid Plant				
04/24/92	1	0.0041	0.0045	34.2
	2	0.0047		
	3	0.0047		
11/04/92	1	0.0075	0.0075	30.8
	2	0.0045		
	3	0.0104		
08/26/93	1	0.0047	0.0041	36.3
	2	0.0037		
	3	0.0050		
08/25/94	1	0.0029	0.0017	35.6
	2	0.0010		
	3	0.0012		
Average		0.0045	0.0045	34.2
Standard Deviation		0.0024		
95% C.L.			0.0092	
95% C.L. lb F/hr = 34.2 TPH x 0.0092 lb/ton = 0.31 lb/hr				
#5 Phosphoric Acid Plant				
06/27/92	1	0.0065	0.0075	84.0
	2	0.0105		
	3	0.0055		
12/11/92	1	0.0018	0.0018	84.0
	2	0.0020		
	3	0.0017		
09/02/93	1	0.0090	0.0061	75.9
	2	0.0047		
	3	0.0045		
09/01/94	1	0.0049	0.0049	71.2
	2	0.0045		
	3	0.0052		
11/09/94	1	0.0016	0.0026	79.0
	2	0.0030		
	3	0.0032		
Average		0.0046	0.0046	78.8
Standard Deviation		0.0025		
95% C.L.			0.0095	
95% C.L. lb F/hr = 78.8 TPH x 0.0095 lb/ton = 0.75 lb/hr				

Note: 95% C.L. = Average + (1.96 x Standard Deviation).

Table 2. Riverview Filter Fluoride Emissions

Test Date	Run #	Fluoride Emissions (lb F/hr)	Compliance Test Average (lb F/hr)	Feed Rate (TPH P_2O_5)
02/26/92	1	0.12	0.155	123.6
	2	0.19		
01/14/93	1	0.401	0.345	—
	2	0.321		
	3	0.313		
03/18/93	1	0.285	0.272	135.9
	2	0.279		
	3	0.253		
03/17/94	1	0.569	0.867	126.7
	2	1.523		
	3	0.507		
Average		0.433	0.410	
Standard Deviation		0.366		
95% Confidence Level			1.13	

Note: 95% C.L. = Average + (1.96 x Standard Deviation).

Department of
Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

February 15, 1995

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. David B. Jellerson, P.E.
Environmental Superintendent
Cargill Fertilizer, Inc.
P. O. Box 9002
Bartow, Florida 33830

RE: PSD-FL-224 (AC53-262532) - Additional Phosphoric Acid Filter and Scrubber for Phosphoric Acid Plants 4 and 5

Dear Mr. Jellerson:

The Department needs the following additional information pursuant to your submittal received on February 2. Item numbers are as listed in the Department's January 12 letter.

3. F.A.C. Rule 62-297.310 provides a five day period for completing three test runs constituting a compliance test. However, this does not mean that simultaneous testing of three scrubbers is accomplished by one test crew going from one scrubber to another over a five day period and adding the results as was done under the old fluoride allocation system. Regulating these modified plants as one multiple emission point BACT source under simultaneous testing would require three test crews, each crew testing one of the three scrubbers at the same time during each run to establish total emissions at the same process conditions. The Department interprets Cargill's response as not objecting to the simultaneous testing requirement. Please confirm that this interpretation is correct.

5. Cargill's stated position on the proposed emission limit is that since existing equipment is being modified, it should not be subject to a standard more stringent than what is essentially the new source standard. The Department's position is that since a new scrubber and filter are being installed, the modified plant should be subject to a more stringent limit established through a top-down BACT analysis. If Cargill's two existing scrubbers were going to handle the additional flow from the new filter, it could be contended that a more stringent limit for the existing control equipment may be precluded by physical limitations.

The Department's historical BACT determination approach has been to rely on actual test results that show a high probability of full-time compliance with the most stringent limit achievable. On page A-15 of the application, the compliance test data clearly show

that 0.0075 lb F/ton P2O5 is the highest fluoride emission rate recorded for each plant over the last three years, while the average has been about 0.005 lb F/ton P2O5.

In regard to the variation of emissions with rate of production, the 06/27/92 and 12/11/92 test results from the No. 5 plant at 84.0 TPH can be averaged to show that emissions at 84.0 TPH vs. 71.3 TPH on 09/01/94 increased only 11% with an increase of 18% in production. For the No. 4 plant, emissions decreased by 35% with a 19% increase in production (11/04/92 vs. 08/26/93). Based on these results, the Department intends to propose a top-down BACT limit in the range of 0.0085-0.0090 lb F/ton P2O5. If Cargill has any information to show that this limit could not be achieved at all times, please provide it.

If further clarification is needed, please contact me or John Reynolds at 904-488-1344.

Sincerely,

A. A. Linero, P.E.
Administrator
New Source Review Section
Bureau of Air Regulation

AAL/JR/kt

cc: W. Thomas, SWD
L. Novak, Polk County
J. Harper, EPA
J. Bunyak, NPS

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David B. Jellerson, PE
Environmental Superintendent
Cargill Fertilizer
P.O. Box 9002
Bartow, FL 33830

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Kelly Pickard

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PS Form 3800, March 1993

PSD-FL-224
AC 53-262532

United States Department of the Interior

FISH AND WILDLIFE SERVICE
1875 Century Boulevard
Atlanta, Georgia 30345

IN REPLY REFER TO:

February 1, 1995

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

Dear Mr. Fancy:

We have reviewed the Prevention of Significant Deterioration Application for the proposed increase in production at the Cargill Fertilizer, Inc., Nos. 4 and 5 Phosphoric Acid production plants. The facility is located 105 km south of Chassahowitzka Wilderness Area (WA), a Class I air quality area administered by the Fish and Wildlife Service. The proposed modification will result in a significant increase in fluoride emissions of 8.3 tons per year.

Best Available Control Technology (BACT)

Cargill proposes to use a wet scrubber to control fluoride emissions. We agree this technology represents BACT for this facility, and we are pleased Cargill proposes to meet emission limits lower than the New Source Performance Standard for fluorides. However, test results provided in the application indicate that emission rates an order of magnitude lower than the proposed level may be achievable. While we understand that past actual emission levels may not be achievable at higher production rates, we believe that operation at higher production rates may demonstrate that a limit lower than the proposed .017 pounds per ton of P_2O_5 is achievable. We believe it is reasonable to establish allowable permit conditions that reflect the actual capabilities of the control equipment. Therefore, we request that Cargill be required to meet actual achievable emission rates as demonstrated during compliance tests or over a reasonable amount of operating time.

Air Quality Related Values (AQRV) Analysis

The AQRV analysis is complete. Predicted impacts of the source's emissions at Chassahowitzka WA are low; therefore, impacts to resources at the wilderness area are expected to be low.

Thank you for giving us the opportunity to comment on this permit application. We appreciate your cooperation in notifying us of proposed projects with the potential to impact the air quality and related resources of our Class I air quality areas. If you have questions, please contact Ms. Ellen Porter of our Air Quality Branch in Denver at telephone number 303/969-2071.

Sincerely yours,

Jerome M. Butler, Ph.D.
Acting Regional Director

cc:
J. Reynolds
J. Harper
L. Novak
B. Thomas

2-7-95 BRW/xt

National Park Service
Air Quality Division

P.O. Box 25287 Denver [illegible] 80225-0287

FACSIMILE COVER SHEET

Date: 1-27-95

Telephone: (303) 969-2070
Fax: (303) 969-2822

To: Mr. C.H. Fancy

From: Ellen Porter

Subject: Cargill Fertilizer, Inc. Letter

~~[illegible]~~ Patty 1-27
FYI - Clare + John L copies - Please return for file
Ellen Porter

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Department of Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

January 12, 1995

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. David B. Jellerson
Environmental Superintendent
Cargill Fertilizer, Inc.
P.O. Box 9002
Bartow, Florida 33830

RE: PSD-FL-224 (AC53-262532) - Additional Phosphoric Acid Filter and Scrubber for Phosphoric Acid Plants 4 and 5

Dear Mr. Jellerson:

On December 15, 1994, the Department's Southwest District received the above-referenced PSD permit application. The application was forwarded to the Department's Bureau of Air Regulation in Tallahassee since the districts do not process PSD permits. Since your application was not received in Tallahassee until December 23, additional time for comments may be needed by the other agencies involved in the review. Therefore, the following incompleteness items will be expanded if requested by those agencies:

1. The application states that no increase in production rate is being proposed. This seems inconsistent with the installation of an additional filter, since its purpose is to increase acid recovery and therefore production rate. (a) What will be the "true" maximum production rate capability for the combined plants? (b) Why not request the true maximum production rate capability now rather than by way of future permit amendments?

2. Attachment "A" (page A-1) is entitled "NOS. 3 AND 4 PHOSPHORIC ACID PRODUCTION PLANTS", yet the description covers the Nos. 4 and 5 plants. Please confirm that this is a typing error.

3. On page A-7, it is requested that the Nos. 4 and 5 plants be regulated as one phosphoric acid plant with two reactor systems. Please explain the advantages of this approach in view of the fact that proper compliance testing of the combined plants would involve simultaneous testing of all three scrubbers.

4. On page A-8, Cargill proposes to voluntarily control the filtrate tank and gypsum slurry tank, which they believe are not NSPS-affected sources. In 1988, in the process of addressing a permitting issue with Gardinier's facility (Riverview PAP 3 and 4), the EPA determined that 30% phosphoric acid clarifiers and tanks are included as Subpart T sources (50% product clarifier/storage

tanks are not included). Please explain Cargill's position on whether or not the 30% tanks (7383D, 7381A-D, 7327, and 7328) must also be vented to the scrubber.

5. This will be the first process-modification "top-down" BACT the Department has done. One recent phosphoric acid BACT was done on IMC's No. 3 Mulberry plant in 1993, but it did not involve an equipment modification. Consequently, it is unlikely that the Department will accept Cargill's current fluoride limit (about four times the average actual emissions). Please re-evaluate the proposed fluoride emission limit and re-propose the most stringent limit that Cargill can achieve. The most recent data from similar plants show that 0.005 lb fluoride/ton P2O5 input would represent a typical average emission level. A safety margin of 40-50% would result in a limit in the range of 0.007-0.008 lb/ton P2O5 input.

6. The Department does not agree with the statement on page A-15 that there is a "commensurate" lb/ton increase in fluoride emissions as production rises. Fluoride emissions will vary with production rate, but not on a directly proportional basis. Other factors include fluoride concentration and the partial pressures of fluoride compounds in the acid. Perhaps most influential is the rate of evacuation since the vent gases approach an equilibrium saturation with fluorides. Consequently, the best design involves an optimum gas flow which evacuates the space but avoids excess fluoride evolution. Please address this issue along with Item 5, above, and determine if the evacuation rates associated with the proposed project could be further optimized.

If there are any questions concerning these incompleteness items, please contact me or John Reynolds at 904-488-1344.

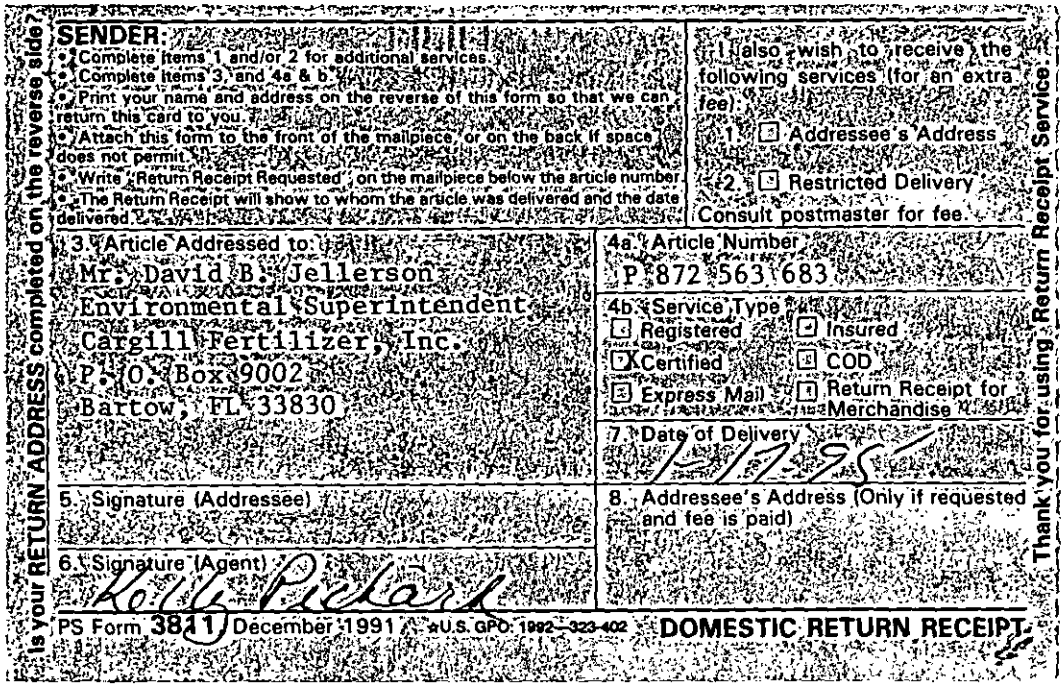
Sincerely,

for John C Brown Jr

Al Linero, P.E.
Supervisor - Permitting and
Standards Section
Bureau of Air Regulation

AL/JR/bjb

c: W. Thomas, SWD
L. Novak, Polk County
J. Harper, EPA
J. Bunyak, NPS
D. Buff, P.E.



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Mr. David B. Jellerson
Environmental Superintendent
Cargill Fertilizer, Inc.
P.O. Box 9002
Bartow, FL 33830

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Department of Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

Janaury 9, 1995

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

RE: Cargill Fertilizer, Inc.
Nos. 4 and 5 Phosphoric Acid Plants
Polk County, PSD-FL-224

Dear Ms. Harper:

Enclosed for your review and comment is the above referenced PSD application. Please forward your comments to the Department's Bureau of Air Regulation as soon as possible. The Bureau's FAX number is (904)922-6979.

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

Sincerely,

Patty Adams

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

CHF/pa

Enclosures

cc: John Reynolds

Department of
Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

January 9, 1995

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

RE: Cargill Fertilizer, Inc.
Nos. 4 and 5 Phosphoric Acid Plants
Polk County, PSD-FL-224

Dear Mr Bunyak:

Enclosed for your review and comment is the above referenced PSD application. Please forward your comments to the Department's Bureau of Air Regulation as soon as possible. The Bureau's FAX number is (904)922-6979.

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

Sincerely,

Patty Adams

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

CHF/pa

Enclosures

cc: John Reynolds