



Jeb Bush  
Governor

# Department of Environmental Protection

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

Colleen M. Castille  
Secretary

March 30, 2006

## CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Jeff Stewart, Environmental Superintendent  
Mosaic Fertilizer, LLC  
8813 U.S. Highway 41 South  
Riverview, Florida 33569

Re: DEP File No. 0570008-053-AC; PSD-FL-315G  
Animal Feed Ingredient Plant Modification

Dear Mr. Stewart:

The Department has received an application on March 3, 2006, which presents certain proposed modifications to the Animal Feed Ingredient (AFI) No. 1 and No. 2 Plants at the Riverview facility. The modification will allow the plants to achieve their permitted production rate of 832,200 tons per year. Based on our initial review of the proposed project, we have determined that additional information is needed in order to continue processing this modification request. Please submit the information requested below to the Department's Bureau of Air Regulation:

1. During the processing of Air Construction Permit No. 0570008-041-AC; PSD-FL-315B in November 2002, several issues were raised by the Department concerning the packed cross-flow scrubber and the process equipment venturi scrubber. The Department required a PE sealed statement from the vendor authenticating that the control equipments will be sufficient to meet the increased load of the acid defluorination system and complying with the BACT limits. Mr. Neil R. Greenwood of KEMWorks Technology, Inc. provided a letter (copy attached) which suggested that the new scrubber has been scaled up properly to handle the increased load from the acid defluorination system and that the scrubber has adequate transfer units to meet the environmental limits. Additionally, Mr. Luis A. Hernandez provided reasonable assurance (copy attached) that the process equipment venturi scrubber should be sufficient in handling the increased dust loads. Please provide necessary documentation to the Department showing that the control equipments were designed as suggested by the consultants and the reasons why the control equipments did not performed as designed. Also, provide PE sealed statement from the vendor concerning the modifications to the scrubbers and the ability of the scrubbers to meet the increased load and the emission limits established for the acid defluorination system. This should include detailed engineering descriptions of the modified scrubbers as well as calculations of their design efficiencies for PM/PM<sub>10</sub> and fluorides.
2. Please submit compliance test data for the AFI plants. This should include the recent test done in November 2005. The test data should also include emissions from the Limestone Silo (EU 080) and actual operating hours and production rates.
3. Please provide documentation to the Department which reflects that the phosphoric acid storage tank is classified as an unregulated emission unit. Indicate which phosphoric acid storage tank will be used to

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store defluorinated acid. Also, indicate the quantity of defluorinated acid being presently produced. Is it being stored in any storage tank? Is the amount of defluorinated acid being produced equivalent to the allowable production rate for the two AFI plants?

4. Enclosed are comments submitted by the Hillsborough County Environmental Protection Commission. Please respond to their concerns.

The Department will resume processing this modification request after receipt of the requested information. Rule 62-4.050(3), F.A.C. requires that all applications for a Department permit must be certified by a professional engineer registered in the State of Florida. This requirement also applies to responses to Department requests for additional information of an engineering nature. A new certification statement by the authorized representative or responsible official must accompany any material changes to the application. Rule 62-4.055(1), F.A.C. now requires applicants to respond to requests for information within 90 days.

If you have any questions regarding this matter, please call me at 850/921-9528.

Sincerely,



Syed Arif, P.E.  
Bureau of Air Regulation

/sa

cc: Mara Nasca, DEP-SWD  
Alice Harmon, HCEPC  
Scott McCann, P.E., Golder Associates, Inc.



DATE: March 30, 2006

TO: Syed Arif, Florida Department of Environmental Protection

FROM: Jeff Sims, Environmental Protection Commission of Hillsborough County

SUBJECT: Mosaic Fertilizer, LLC  
Permit No. 0570008-053-AC

The following are comments from EPC regarding the construction application received from Mosaic Fertilizer, LLC received on March 2, 2006. The application is for the modification of Permit No. 0570008-043-AC, which is a modification of Permit No. 0570008-036-AC for expansion of the AFI operation including the addition of a 2<sup>nd</sup> AFI granulation train.

Within the application submitted, Mosaic specifies that the construction authorized by those permits was completed. Per Rule 62-210.300(1)(a), F.A.C., a construction permit is issued for a period of time to allow for construction and to demonstrate initial compliance. It does not appear appropriate to process an application for modification of a construction permit that should be included into a revised operating permit as already submitted. Incorporation of the existing construction permit into an operating permit is necessary to establish operating parameters to define its operation. Continual modification of construction permits never allows for these parameters to be established. Therefore, EPC believes that a new standalone construction application should be processed regarding the changes requested. In accordance with Rule 62-213.420(1)(a)4., F.A.C, the facility should submit a revised TV application no later than 180 days after the emission unit commences operation.

Also, an updated process flow diagram detailing the changes requested as part of the application was not included with the package received by EPC. A diagram from a former application was reviewed; however, sufficient time to evaluate the application was not available. EPC believes that detailed analysis of an updated diagram is necessary to provide reasonable assurance that the changes will maintain compliance with emission standards. A better description of how the "recirculated fresh water" scrubber will operate should also be included with a response.

Therefore, we believe that the application should be deemed incomplete for the stated reasons.

October 24, 2002

Henry Thorpe  
Cargill Crop Nutrition  
8813 Hwy 41 South  
Riverview, FL 33569

**Re: AFI Scrubber**

Dear Henry:

As designers of the original AFI scrubber, KEMWorks Technology, Inc. is the logical choice to verify that the new scrubber has been scaled up properly to handle the increased load from the acid defluorination system.

We have reviewed the drawings, examined the operating data, looked at the operating equipment and prepared calculations. We find that scrubber has adequate transfer units to meet the environmental limits without additional scrubbers in the system. This is similar to other installations that we have designed that have also met environmental regulations. This conclusion is based on the following primary design criteria:

- Plant design capacity is 2280 tpd of MCP or DCP. As part of this plant, fluorine is evolved from phosphoric acid to a scrubbing system in a continuous process.
- Scrubber design is per Cargill Scrubber Assembly drawing 28-M-0178 rev.4 with the following exceptions; six layers of Kimre packing are installed in the 2<sup>nd</sup> section (instead of 4), quench spray nozzles are model no. MP-1000, scrubber spray nozzles are TF-40 on top and TF-24 for the others.
- The scrubber design gas rate is 20,000 acfm at the outlet. The design load to scrubber is 1300 lb/hr fluorine. The allowed emissions are a maximum of 2.11 lb/hr of fluorine.
- The demister pad is sprayed with a minimum of 60 gpm fresh water. The scrubber pads (3 sections) are sprayed with makeup pond water. The quench section is sprayed with recirculated pond water.
- The first scrubbing section is sprayed with pond water with a minimum of 5 gpm/ft<sup>2</sup> coverage. The 2<sup>nd</sup> and 3<sup>rd</sup> scrubbing sections are sprayed with pond water with a minimum of 4 gpm/ft<sup>2</sup> coverage. These coverages result in a minimum total pond water requirement of approximately 800 gpm.
- The worst case pond water is available at 100° F with 0.9% fluorine.

Please let us know if you need additional evaluation of the scrubbing system at your AFI plant.

Sincerely,



Neil R. Greenwood, P.E. 26926  
Engineering Manager  
KEMWorks Technology, Inc. Certificate of Authorization No. 7190

Luis A. Hernandez, P.E.  
P.O. Box 2690  
Lakeland, FL 33806-2690

October 24, 2002

Henry Thorpe , Design & Construction Projects Manager  
Cargill Fertilizer, Inc.  
8813 Highway 41 South  
Riverview, FL 33569

Phone: (813) 671-6236 , Fax: 813-671-6351  
e-mail address: henry\_thorpe@cargill.com

Subject: Venturi/Cyclonic Scrubber Designs Supplied To You For  
Cargill Fertilizer, Riverview, Florida.  
Cargill PO#: 10073555  
H&B Order: HB 1007 3555  
D. R. Technology Reference: 02887

Dear Mr. Thorpe:

Based on our various discussions, we have supplied the designs for two adjustable throat D. R. Technology Venturi Scrubbers with associated cyclonic disengaging vessels, one being the Equipment Ventilation Scrubber.

In response to your inquiry, this unit is capable of achieving discharge dust loads of 0.012 grains/DSCF when operating under proper design flows and recommendations.

If you have any questions, please contact the undersigned.

Sincerely,



Luis A. Hernandez, P.E.  
FL P.E.#: 39567  
Exp. Date: 2/28/03



Mosaic Fertilizer, LLC  
8813 Highway 41 South  
Riverview, FL 33569  
www.mosaicco.com

Tel 813-677-9111

Certified Mail 7003 1010 0004 8614 4175

February 23, 2006

Florida Department of Environmental Protection  
Bureau of Air Regulation  
111 S. Magnolia Drive, Suite 4  
Tallahassee, FL 32399-2400

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0570008-053-AC

PSD-FL-315G

Attention: A.A. Linero, P.E., Program Administrator, South J

RE: MOSAIC FERTILIZER, LLC – FACILITY ID NO. ...  
APPLICATION TO MODIFY AIR CONSTRUCTION PERMIT NO. 0570008-043-AC;  
PSD-FL-315D AS IT APPLIES TO ANIMAL FEED INGREDIENT PLANTS 1 AND 2

Dear Mr. Linero:

Mosaic Fertilizer, LLC (Mosaic) owns and operates a phosphate products manufacturing plant located at 8813 U.S. Highway 41 South, Riverview, Hillsborough County, Florida. Mosaic is proposing to enhance their Animal Feed Ingredient (AFI) Plants so that they can attain closer to their permitted production capacity of 832,200 tons per year (TPY) of AFI based on currently permitted production limits of 1,080 tons per day (TPD) for AFI Plant No. 1 and 1,200 TPD for AFI Plant No. 2. To date, the combined maximum annualized AFI production rate for these plants has been less than 300,000 TPY.

On November 21, 2001, the FDEP issued Air Construction Permit No. 0570008-036-AC; PSD-FL-315 for expansion of what was then the Riverview facility of Cargill Fertilizer, Inc. The following facility modifications were authorized by this permit:

- Increased molten sulfur throughput for the molten sulfur handling system;
- Additional digestion capacity associated with the Dorrco Reactor at the Phosphoric Acid Plant;
- Modification of the Granular Super Triple Phosphate Plant;
- Modification of the AFI Plant, including construction of a second AFI granulation train (AFI Plant No. 2);
- Modification of the No. 5 Diammonium Phosphate (DAP) Plant; and
- Removal of a production rate cap for the Nos. 8 and 9 Sulfuric Acid Plants.

On November 12, 2002, the Department issued Air Construction Permit No. 0570008-041-AC; PSD-FL-315B. This permit, a modification to Air Construction Permit No. 0570008-041-AC; PSD-FL-315, authorized the following modifications to the AFI Plant:

- For AFI Plant No. 2, installation of a Venturi scrubber to control particulate matter (PM) emissions from the milling, cooling, and classification system instead of the baghouse originally proposed. Additionally, construction of a single stack to vent emissions from this new Venturi scrubber and the Venturi scrubber used to control PM emissions from the

granulation system. Originally, separate stacks had been permitted for the baghouse used to control PM emissions from the milling, cooling, and classification system, and for the granulation Venturi scrubber used to control PM emissions from the granulation system.

On February 4, 2004, the Department issued Air Construction Permit No. 0570008-043-AC; PSD-FL-315D which authorized modifications to AFI Plants Nos. 1 and 2. A summary of the modifications authorized through modification of Permit No. 0570008-036-AC; PSD-FL-315 is presented below:

AFI Plant No. 1

- Maintain a single stack for the scrubbers controlling emissions from the defluorination, granulation, and milling, cooling, and classification systems. Mosaic had originally requested installation of two stacks.
- Use of Venturi and packed cross-flow scrubbers to control emissions from the defluorination system.
- Maintain the use of a Venturi scrubber system to control emissions from the granulation and material handling systems. Mosaic had originally proposed a baghouse to control emissions from the material handling system.

AFI Plant No. 2

- Construction of two new Venturi scrubbers to control emissions from the granulation system and material handling system (Mosaic had originally proposed a Venturi scrubber to control emissions from the granulation system and a baghouse to control emissions from the material handling system).
- Maintain a single common stack for the two scrubbers controlling emissions from the granulation and material handling systems. Mosaic had originally requested installation of two stacks, one for each scrubber.

Permitted emission limits and the Best Available Control Technology (BACT) analysis were also revised in this permit to reflect the requested changes to the pollution control equipment.

The construction authorized by this permit was completed, and the permit closed in November 2005 (except for administrative purposes to allow the FDEP to process a Title V revision application for the facility).

On May 4, 2004, the Department issued Air Construction Permit No. 0570008-042-AC; PSD-FL-315C which authorized modification of the No. 5 DAP Plant, but did not include any modifications to the AFI Plants.

Although Mosaic believed at the time of permitting that the AFI plants would be capable of attaining their permitted production rates, as currently configured, Mosaic is unable to attain the permitted daily AFI production limits for the AFI Plants. To date, the maximum AFI production rate for AFI Plant No. 1 has been 534 TPD, compared to a permitted production rate of 1,080 TPD. To date, the maximum AFI production rate for AFI Plant No. 2 has been 644 TPD, compared to a permitted production rate of 1,200 TPD. The maximum annual combined AFI production rate in 2004 was 252,822 tons AFI and in 2005 was 236,238 tons AFI, compared to a production capacity of 832,200 TPY (based on a combined production rate for AFI Plants Nos. 1 and 2 of 2,280 TPD and 365 days per year of operation).



As a result, Mosaic is proposing to make the following enhancements to AFI Plants Nos. 1 and 2 to realize daily and annual production rates closer to permitted capacities:

1. Upgrade of the Defluorination Scrubber – The proposed scrubber upgrades include converting the third stage of the Kimre scrubber into a recirculated fresh water scrubber. A sump pump will be installed within the base of the existing Kimre scrubber to collect the water from the third and fourth stages. This water will be pumped to spray nozzles to irrigate the surface of the third stage of the Kimre packing. This modification will reduce the overall fresh water usage at the facility which is an important component of our Process Water Reduction Plan and pond water reduction initiatives. Additionally to increase differential pressure across the Venturi and to recapture air flow lost when the Venturi was installed in 2005, the existing 100 hp induced draft fan and motor used for the scrubber may be replaced with a 200 hp motor and associated induced draft fan. No increase in fluoride emissions, above those currently permitted, are requested due to these proposed modifications.
2. Upgrade of the Limestone Unloading Operation – Currently there are two limestone unloading operations: the East and West Limestone Unloading Systems. Currently the East Limestone Unloading System consists of a 4-inch diameter limestone transfer line and a 75-horsepower (hp) blower that generates approximately 620 cubic feet per minute (cfm) of air flow. The West Limestone Unloading System consists of a 6-inch diameter limestone transfer line and a 125-hp blower that generates approximately 1,200 cfm of air flow. Particulate matter (PM) emissions from both limestone unloading operations are controlled by a single baghouse that was installed as part of Air Construction Permit No. 0570008-043-AC; PSD-FL-315D. As permitted, this baghouse is capable of handling 3,500 cfm of air flow.

The proposed project involves upgrading the East Limestone Unloading Operation by duplicating the equipment currently in use at the West Limestone Unloading Operation. The existing baghouse is capable of handling the total flow from both the upgraded East system and the West system (2,400 acfm total). PM emission rates from this baghouse were originally estimated using an exhaust flow rate of 3,500 cfm and a grain loading of 0.012 grains per dry standard cubic foot; therefore, no increase in emissions above those currently permitted is requested.

3. Tank Conversion – The proposed project involves converting an existing phosphoric acid storage tank into a defluorinated acid storage tank. Currently, the defluorinated acid system has demonstrated the capability of producing more defluorinated acid than can be used by both AFI plants combined. However, there is currently no way to store this excess acid, so the defluorination acid system is operated at less than capacity. Having the capability to store the excess defluorinated acid would allow the AFI plant to continue operating when the defluorinated acid system is down, thus increasing annual production. In order to implement this change, a pipe connection between the existing defluorinated acid tank and the existing phosphoric acid tank would be made. Since the defluorinated acid system is already permitted to operate continuously, no additional emissions, above those currently permitted, are requested by this project. The storage tank is and will continue to be an unregulated emission unit.

Although the proposed projects involve physical changes to the AFI Plants, no increase in emissions above the currently permitted emission rates are requested. As such, these upgrades can be completed without modifying permit conditions in the existing Air Construction Permits applicable to the AFI Plants.

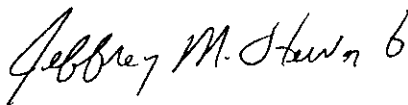
Construction was just completed on the AFI Plants in November 2005 and, therefore, normal operations began at that time. According to Rule 62-210.200(184), a "new emissions unit," for purposes of Rule 62-212.400 (i.e., the PSD rules), is any emission unit that is or will be newly constructed and that has existed for less than 2 years from the date of beginning normal operation. Therefore, the AFI Plants would be considered a new emission unit under this rule. According to Rule 62-210.200(34)(c), for a new emissions unit, the "baseline actual emissions" for purposes of determining the emissions increase that will result from the initial construction and operation of such unit shall equal zero; thereafter, for all other purposes, shall equal the unit's potential to emit. Since the proposed project is not the "initial construction and operation of such unit," the baseline actual emission for the proposed project is equal to the unit's potential to emit. Since Mosaic is not requesting any increase in potential emission due to this project, the net increase in emission due to the project is zero. Therefore, the project does not constitute a "modification" under Florida's air rules.

Additionally, a full best available control technology (BACT) analysis for the AFI plants was completed in 2004. There have not been any technological advances in the application of packed cross-flow scrubbers or Venturi scrubbers that would indicate that the current pollution control equipment used for the AFI Plants is not reflective of current BACT.

As a result, we believe the proposed upgrades to the AFI Plants can be permitted as a minor modification to Air Construction Permit 0570008-043-AC; PSD-FL-315D. Permit application forms and process flow diagrams showing the current and proposed configurations of the AFI Plants are attached.

If you have any questions concerning this correspondence, please call me at (813) 671-6369, or Scott McCann of Golder Associates, Inc. at (352) 336-5600, extension 545.

Sincerely,



Jeffrey M. Stewart  
Environmental Superintendent

Enclosures

cc: Harrison, Schneider, Giblin, Lulf – Mosaic  
File No. P 05-1  
J. Waters, FDEP – Southwest District 7003 1010 0004 8614 4182  
A. Harman – EPCHC 7003 1010 0004 8614 4199  
Scott McCann – Golder Associates