



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET, N.E.
ATLANTA, GEORGIA 30365

AUG 28 1991

4APT-AEB

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

RECEIVED
SEP 3 1991
Division of Air
Resources Management

RE: Cargill Fertilizer Incorporated, Riverview, Florida (PSD-FL-178)

Dear Mr. Fancy:

This is to acknowledge receipt of an application for a Prevention of Significant Deterioration (PSD) permit for the above referenced facility by your letter dated May 17, 1991. Cargill (formerly Gardinier, Inc.) proposes to increase maximum diammonium phosphate (DAP) production at the No. 5 DAP plant from 114 TPH to 146 TPH. A copy of additional DAP plant engineering design and netting information requested by FDER was received by EPA-Region IV on June 24, 1991. Further clarification was requested from Cargill regarding the use of "leftover" fluoride (Fl) emission credits in PSD-FL-178 netting calculations by your letter dated July 12, 1991. EPA-Region IV assistance in making an interpretation of PSD regulations regarding the creditability of emissions for netting was also requested by FDER as discussed between Mr. John Reynolds of your staff and Mr. Stan Kukier of my staff on July 18, 1991.

BACKGROUND

Additional information concerning a previous Cargill (Gardinier) No. 5 DAP plant PSD permit and modification (PSD-FL-026) issued on July 5, 1980, and June 14, 1988, respectively, was requested and received from Mr. David Buff of KBN Engineering and Applied Science by fax dated July 22, 1991. The source netted out of PSD review in a construction permit issued for an expansion of the No. 5 DAP plant by the State of Florida (Permit Reference No. AC29-135083) on October 14, 1987. Emissions netting was performed by Cargill for the 1987 No. 5 DAP plant expansion using contemporaneous allowable PM, Fl, and SO₂ triple superphosphate (TSP) reactor belt, dryer, and sizing unit shutdown emission credits.

The original No. 5 DAP plant PSD permit (PSD-FL-026) was amended by EPA-Region IV on June 14, 1988 to reflect changes in PM, Fl, and SO₂ maximum emission rate limits due to the increase in operating capacity, and to make the shutdown of TSP production units federally enforceable. FDER's question concerns whether or not -28.8 TPY of

contemporaneous Fl emission credits "leftover" from the 1987 Cargill emissions netting calculations can still be applied to the 17.7 TPY total estimated PSD-FL-178 Fl emissions after the 1988 PSD-FL-026 EPA permit amendment. A December 29, 1989 guidance memorandum (received via fax by John Reynolds on July 17, 1991) from John Calcagni to Bruce P. Miller regarding the use of netting credits recommends following the procedure described below for considering emissions increases and decreases in a netting calculation. Emissions increases and decreases are considered in their entirety and do not result in "leftover" emissions credits.

USE OF NETTING CREDITS

The pertinent PSD criteria for emissions increases and decreases to be creditable for netting transactions is 40 C.F.R. § 52.21 (b) (3) (iii), which states that emissions increases and decreases are creditable:

b)... "if the reviewing authority has not relied on it (e.g., an emissions decrease) in issuing a permit for the source under regulations approved pursuant to this section, which permit is in effect when the increase in actual emissions from the particular change occurs." [NOTE: EPA's policy is to interpret the permit to be a PSD permit.]

When a source nets out of review, the permitting authority has not relied upon creditable emissions increases or decreases in issuing a PSD permit for that pollutant. Since Cargill netted out of review for fluorides in the 1987 No. 5 DAP plant expansion and no new PSD permit was issued, the creditable Fl emissions decreases are still available for application to estimated PSD-FL-178 Fl emissions. The emissions limit for Fl in the 1987 permit was not a PSD limit. As a result, estimated Fl emissions after netting (-11.1 TPY) will remain below the PSD significance level (3 TPY)

BACT REVIEW

The increase in DAP production capacity to 146 TPH would be accomplished by an increase in the recycle system capacity. Additional screens and mills are to be added and the recycle elevator replaced. The product bucket elevator, belt conveyors, as well as the existing cyclone and wet scrubber system would also be upgraded to accommodate the increased throughput. Significance levels for PSD applicability are exceeded only for PM (65.7 TPY). The maximum PM permit emission rate proposed (15 lb/hr) is less than the maximum rate previously permitted (20 lb/hr). There will also be decreases in maximum permitted emission rates for SO₂ and NO_x. The proposed maximum permit Fl emission rate (4.03 lb/hr), estimated using the 40 C.F.R. § 60.222 (a), Subpart V, DAP, NSPS fluoride

emission factor of 0.06 lb/ton P_2O_5 feed, is higher than the Fl emission rate previously permitted (3.3 lb/hr).

The No. 5 DAP plant process equipment is subject to BACT review. These emission units include the reactor, granulator, dryer, cooler, and materials handling equipment. Process equipment emissions are currently controlled by cyclones, three venturi scrubbers in parallel, and two up-flow tail gas scrubbers also operating in parallel. Control equipment modifications such as airlock, spray nozzle, and mist eliminator replacement, as well as additional instrumentation, larger packing support plate openings, more liquid feed points, and increased water flow and liquor recirculation rates, are proposed to provide improved control of greater PM and Fl process emissions due to increased throughput.

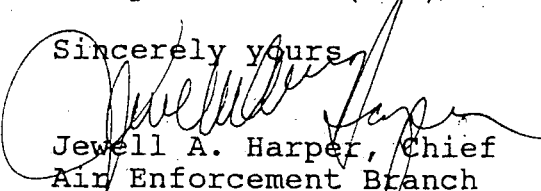
A review of the RACT/BACT/LAER Clearinghouse data base reveals that wet venturi scrubber systems have been determined BACT for two other Florida DAP facilities, Agrico Chemical Co. and W.R. Grace & Co., and one Wyoming DAP facility, Chevron USA Co.. Maximum allowable permit PM emission rates for the Grace and Chevron DAP facilities are 0.50 lb/ton P_2O_5 and 0.0180 gr/acf, respectively. The maximum allowable permit PM emission rate proposed by Cargill is equivalent to 0.22 lb/ton P_2O_5 or 0.0143 gr/acf.

Wet scrubbers are mentioned as the exclusive means of DAP plant emission control in EPA-340/1-77-009, "Phosphate Fertilizer Plants Inspectional Manual for Enforcement of New Source Performance Standards", due to the necessity for both gaseous and particulate emission removal and the presence of high humidity in the gas streams. Primary venturi scrubbers are the key control devices used in DAP plants, with secondary packed flow scrubbers used to provide high Fl emission control efficiencies. Background information for standards of performance for the phosphate fertilizer industry (EPA-450/2-74-019a) mentions packed scrubbers as representing the best demonstrated Fl emission control technology. EPA-450/3-79-038, "Review of New Source Performance Standards for the Phosphate Fertilizer Industry", states that scrubbers have remained the principal means of controlling Fl emissions from phosphate plants since NSPS publication. EPA-600/2-79-169, "Evaluation of Control Technology for the Phosphate Fertilizer Industry", also mentions use of a two-stage primary venturi/secondary tail gas scrubber combination as being able to provide exceptional DAP plant particulate and gaseous fluoride emission control. Current actual Cargill No. 5 DAP plant venturi scrubber PM and tail gas scrubber Fl removal efficiencies are 98% and 95%, respectively.

Based upon our review of previous BACT determinations and all available EPA background documentation concerning DAP facilities, the modified two-stage wet scrubber system as proposed by Cargill can be recommended as BACT for particulate emission control. The PM emission limit proposed by Cargill is lower than PM emission limits previously determined BACT for both Grace and Chevron DAP plants, and 25% lower than the previous allowable PSD-FL-026 amendment PM emission limit. EPA-600/2-79-169 also describes DAP facilities utilizing a venturi/tail gas scrubber combination control system for PM and F1 emissions as being well controlled.

Thank you for the opportunity to review and comment on this package. If you have any questions or comments, please contact Mr. Stan Kukier of my staff at (404) 347-5014.

Sincerely yours



Jewell A. Harper, Chief
Air Enforcement Branch
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