Memorandum

Florida Department of Environmental Protection

TO: Michael G. Cooke

THRU: Trina Vielhauer
Al Linero

FROM Syed Arif

DATE: June 1, 2004

SUBJECT: CF Industries, Inc. – Plant City Phosphate Complex
DEP File No. 0570005-019-AC, PSD-FL-339

Attached for approval and signature is a PSD construction permit to modify the existing "C" and "D" Sulfuric Acid Plants (SAP) at its phosphate fertilizer manufacturing facility located in Plant City, Hillsborough County, Florida. The proposed changes will increase the production rate for each plant to 2,750 tons per day. The proposed project involves upgrading and/or replacement of plant equipment to accomplish the production increases, as described in the permit application.

The Department proposed 3.5 lb/ton, 3-hr. rolling average for SO_2 and 0.10 pounds of Sulfuric Acid Mist per ton of product as BACT for this project. The BACT limit of 3.5 pounds per ton 100% H_2SO_4, 3-hour rolling average for SO_2 proposed by the Department is the most stringent limit established to date for a sulfuric acid plant in Florida. The BACT emission limit established for SO_2 will be complied with a certified continuous emission monitor.

The project is subject to Prevention of Significant Deterioration (PSD) review for sulfur dioxide, nitrogen oxides and sulfuric acid mist in accordance with 62-212.400, 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.

The double absorption process including installation of cesium promoted catalyst and mist eliminators will control sulfur dioxide and sulfuric acid mist emissions from the sulfuric acid plants. An air quality impact analysis was required for sulfur dioxide and nitrogen oxides.

The Public Notice was published on April 29, 2004 in the Tampa Tribune. No comments were received from EPA Region IV or National Park Service. Comments were submitted by Environmental Protection Commission of Hillsborough County and the applicant.

June 1 is Day 27 for the project. The project is being expedited as requested by the applicant. CF has notified us that the turnaround for this plant will start on June 1, 2004.

I recommend your approval and signature.

MGC/sa

Attachments

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
NOTICE OF FINAL PERMIT

In the Matter of an
Application for Permit

DEP File No. 0570005-019-AC
PSD-FL-339

Mr. Herschel E. Morris
CF Industries, Inc.
P.O. Box Drawer L
Plant City, Florida 33564

Enclosed is the FINAL Permit Number PSD-FL-339 for increasing the production rate of the existing "C" and "D" Sulfuric Acid Plants to 2,750 tons per day at the existing Plant City Phosphate Complex in Hillsborough County. This permit is issued pursuant to Chapter 403, Florida Statutes and in accordance with Rule 62-212.400., F.A.C. - Prevention of Significant Deterioration (PSD).

Any party to this order (permit) has the right to seek judicial review of the permit pursuant to Section 120.68, F.S., by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the Department in the Legal Office; and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within 30 (thirty) days from the date this Notice is filed with the Clerk of the Department.

Executed in Tallahassee, Florida.

Trina L. Vielhauer, Chief
Bureau of Air Regulation

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this NOTICE OF FINAL PERMIT (including the FINAL permit) was sent by certified mail (*) and copies were mailed by U.S. Mail before the close of business on 06/01/04 to the person(s) listed:

Herschel E. Morris, CF Industries, Inc.*
Gregg Worley, EPA
John Bunyak, NPS
Jerry Kissel, DEP-SWD
A. Harmon, HCEPC
David Buff, P.E., Golder Associates, Inc.

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) 06/01/04 (Date)

FINAL DETERMINATION

CF Industries, Inc.
"C" and "D" Sulfuric Acid Plants
DEP File No.: 0570005-019-AC, PSD-FL-339

An Intent to Issue Air Construction Permit for CF Industries, Inc., located at 10608 Paul Buchman Highway, Plant City, Hillsborough County, Florida, was distributed on April 28, 2004. The Public Notice of Intent to Issue Air Construction Permit was published in the Tampa Tribune on April 29, 2004. Copies of the draft construction permit were available for public inspection at the Department offices in Tampa and Tallahassee.

The Fish and Wildlife Service, the U.S. Environmental Protection Agency and the public submitted no comments. Some comments on the proposed draft permit were submitted by the Environmental Protection Commission of Hillsborough County (EPCHC) and the applicant.

A summary of the comments received are provided in the following paragraphs:

EPCHC's comments:

The comments submitted by EPCHC dealt with the timelines for changing the packing in the four absorption towers and the replacement of the four gas heat exchangers for the "C" and "D" Sulfuric Acid Plants (SAPs). These comments were forwarded to the applicant in an e-mail dated May 6, 2004. The applicant provided responses to the EPCHC comments in their letter dated May 13, 2004. EPCHC received a copy of the response and were satisfied with the applicant's response for their concerns.

Applicant's comments:

With regard to the "Project Description" on Page 4 of the "Technical Evaluation and Preliminary Determination" the statement is made in the first bulleted paragraph that "the packing in the remaining four absorption towers may be replaced with 'in kind' packing as the current packing exhibits high pressure drop and requires replacement." CF wishes to clarify that the four absorption towers referred to include the "C" Sulfuric Acid Plant's interpass tower and the "D" Sulfuric Acid Plant's drying, interpass, and final towers.

Also, regarding the "in kind" replacement of the packing in those towers, CF's proposal (re: Herschel E. Morris Letter of March 9, 2004, to A.A. Linero, CF Response 7) is to replace the existing packing in those towers with Monsanto WavePak packing or other functionally equivalent "packing styles that have the same pressure drop and misting characteristics consistent with the proposed tower performance and design." CF requested the Department's concurrence that these functionally equivalent systems would qualify as "in kind" replacements. CF would expect the following repack schedule: "C" SAP Interpass Tower in 2009 and the "D" SAP Drying, Interpass, and Final Towers in 2010.

The Monsanto WavePak tower packing has been evaluated by the DEP and authorized for use (upon issuance of the permit) in two of the absorption towers. CF believes there should be no objection to its use, or the use of a functionally equivalent product, in the same service in the other towers, if such use will not result in an increase in the permitted rates. CF will provide a letter notification to the DEP in advance of any packing change that is made during or beyond the term of the construction permit currently in process.

Additionally, CF projects the following replacement schedule for the gas heat exchangers: "C" and "D" SAP XO-2 heat exchangers in 2011, "C" SAP XO-3 heat exchanger in 2012, and "D" SAP XO-3 heat exchanger in 2013.

Department's Response:

The overall project authorized by this permit will begin immediately upon issuance. The basic work associated with the production increase, the required emissions control, and submission of a complete Title V permit application will most likely be accomplished by the middle of 2005. The expiration date indicated on the draft permit is April 30, 2006.

The additional tasks, including the work on the heat exchangers and replacement of packing, are already authorized by the proposed permit and are covered by the production and emission limits given therein. However, according to the applicant's comments above, the additional portions of the project will probably not be conducted until years after the expiration of the permit.

Section III, Condition 24 of the draft permit states that "in conjunction with extension of the 18-month periods to commence or continue construction, or extension of the permit expiration date, the permittee may be required to demonstrate the adequacy of any previous determination of best available control technology (BACT) for the source."

If the permit (including any extensions) expires before the additional work is performed, the applicant can request that the Department review the described tasks to determine whether or not they trigger PSD and a new BACT determination. This determination needs to be performed near the time the actual work is considered and cannot be performed years in advance.

It is not yet clear exactly what the applicable PSD/New Source Review provisions will be that far into the future. This is the same situation encountered by all industry. The various reasonable scenarios were discussed with the applicant during a pre-application meeting in Tampa on December 19, 2003.

Department Correction:

The Department will make corrections to Section III, Condition 14 (first paragraph) as follows:

"The subject emission units shall be tested for compliance with the above emission limits within 60 days following achievement of ~~2600~~ 2475 tons per day of sulfuric acid or within ~~60~~ 180 days following the startup after installing the cesium promoted vanadium catalyst, whichever is sooner."

The production rate was changed to 2475 tons per day, as that rate represents 90 percent of the maximum operating rate. The days were changed to 180 days to conform to the rules.

The final action of the Department is to issue the permit with the changes noted above.

Department of Environmental Protection

Jeb Bush
Governor

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

Colleen M. Castille
Secretary

PERMITTEE:

CF Industries, Inc.
P.O. Box Drawer L
Plant City, Florida 33564

File No.	0570005-019-AC
Permit No.	PSD-FL-339
SIC No.	2874
Project:	Sulfuric Acid Increase
Expires:	April 30, 2006

Authorized Representative:

Herschel E. Morris
V.P. Phosphate Operations & General Manager

PROJECT AND LOCATION:

Permit for the construction /modification of the Plant City Phosphate Complex to increase production rate of the existing "C" and "D" Sulfuric Acid Plants to 2,750 tons per day, each. The UTM coordinates are Zone 17; 388 km E; 3116 km N.

STATEMENT OF BASIS:

This construction permit is issued under the provisions of Chapter 403 of the Florida Statutes (F.S.), and the Florida Administrative Code (F.A.C.) Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297. 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).

ATTACHED APPENDICES ARE MADE A PART OF THIS PERMIT:

Appendix A	Best Operational Start-up Procedures for Sulfuric Acid Plants
Appendix BD	BACT Determination
Appendix GC	Construction Permit General Conditions

Michael G. Cooke, Director
Division of Air Resources
Management

SECTION I. FACILITY INFORMATION

FACILITY DESCRIPTION

The Plant City Phosphate Complex is an agricultural chemicals manufacturing facility. Phosphate rock is reacted with sulfuric acid to make phosphoric acid. The phosphoric acid is further processed into monoammonium phosphate (MAP) and diammonium phosphate (DAP).

This permit is issued to allow an increase in the production rate of the existing "C" and "D" Sulfuric Acid Plants to 2,750 tons per day, each; and a proportionate increase in the sulfur feed rate to the two plants.

REGULATORY CLASSIFICATION

The facility is classified as a major source of air pollution or Title V source because it has the potential to emit at least 100 tons per year of sulfur dioxide and nitrogen oxides.

The facility is also classified as a "Major Source" per 40 CFR 63.2, Definitions [adopted and incorporated by reference by the Department at Paragraph 62-204.800(11)(d)] because it consists of a group of stationary sources located within a contiguous area and under common control that emit or have the potential to emit considering controls, in the aggregate, 10 tons per year or more of any hazardous air pollutant or 25 tons per year or more of any combination of hazardous air pollutants.

If additional testing and modeling demonstrate that the facility is not and has never been a major source of hazardous air pollutants since at least June 10, 2002, the permittee shall have the right to request that the Department revise the permit to remove those requirements and conditions that are applicable because the facility is a major source of hazardous air pollutants as determined by the Department.

PERMIT SCHEDULE:

- 01-22-2004: Date of Receipt of Application
- 04-20-2004: Application Complete
- 04-27-2004: Mailed Intent to Issue Permit
- 04-29-2004: Notice published in the Tampa Tribune

RELEVANT DOCUMENTS:

The documents listed form the basis of the permit. They are specifically related to this permitting action. These documents are on file with the Department.

- Application received 01-22-2004
- Department's incompleteness letters dated 02-20-2004 and 03-29-2004
- Applicant's letters received 02-23-2004, 03-11-2004 and 04-20-2004
- Technical Evaluation and Preliminary Determination dated 04-27-2004
- Best Available Control Technology determination (issued concurrently with permit)
- Applicant's letter dated May 13, 2004, responding to Hillsborough County's concerns for the Draft Construction Permit
- Applicant's letter dated May 12, 2004, providing comments on the Draft Construction Permit

SECTION II. EMISSION UNIT(S) 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. Terminology: The terms used in this permit have specific meanings as defined in the corresponding chapters of the Florida Administrative Code.
4. Applicable Regulations, Forms and Application Procedures: Unless otherwise indicated in this permit, the construction and operation of the subject emissions unit 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, 62-110, 62-204, 62-212, 62-213, 62-296, 62-297 and the Code of Federal Regulations Title 40, Part 60, adopted by reference in the Florida Administrative Code (F.A.C.) regulations. 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. Issuance of this permit does not relieve the facility owner or operator from compliance with any applicable federal, state, or local permitting or regulations. [Rules 62-204.800, 62-210.300 and 62-210.900, F.A.C.]
5. Expiration: This air construction permit shall expire on **April 30, 2006** [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]
6. 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.]
7. Annual Reports: Pursuant to Rule 62-210.370(2), F.A.C., Annual Operation Reports, the permittee is required to submit annual reports on the actual operating rates and emissions from this facility. Annual operating reports using DEP Form 62-210.900(4) shall be sent to the DEP's Southwest District office by March 1st of each year.
8. Stack Testing Facilities: Stack sampling facilities shall be installed in accordance with Rule 62-297.310(6), F.A.C.

SECTION II. EMISSION UNIT(S) ADMINISTRATIVE REQUIREMENTS

9. Quarterly Reports: Quarterly excess emission reports, in accordance with 40 CFR 60.7 (a)(7) (c) (1997 version), shall be submitted to the DEP's Southwest District office.

10. New or Additional Conditions: For good cause shown and after notice and an administrative hearing, if requested, the Department may require the permittee to conform to new or additional conditions. The Department shall allow the permittee a reasonable time to conform to the new or additional conditions, and on application of the permittee, the Department may grant additional time. [Rule 62-4.080, F.A.C.]

SECTION III. EMISSION UNIT(S) SPECIFIC CONDITIONS

COMMON CONDITIONS: 40 CFR 60 - NEW SOURCE PERFORMANCE STANDARDS

This permit addresses the following emission units:

EMISSION UNIT NO.	EMISSION UNIT DESCRIPTION
007	"C" Sulfuric Acid Plant
008	"D" Sulfuric Acid Plant

These emission units shall comply with all applicable requirements of 40 CFR 60, General provisions, Subpart A, adopted by reference in Rule 62-204.800(7), F.A.C.

- 40 CFR 60.7, Notification and record keeping
- 40 CFR 60.8, Performance tests
- 40 CFR 60.11, Compliance with standards and maintenance requirements
- 40 CFR 60.12, Circumvention
- 40 CFR 60.13, Monitoring requirements
- 40 CFR 60.19, General notification and reporting requirements

The "C" and "D" Sulfuric Acid Plants are subject to the applicable requirements of the New Source Performance Standards (NSPS) under 40 CFR 60 Subpart H, Standards of Performance for Sulfuric Acid Plants.

SPECIFIC CONDITIONS :

The Specific Conditions listed in this subsection apply to the following emission units:

EMISSION UNIT NO.	EMISSION UNIT DESCRIPTION
007	"C" SAP
008	"D" SAP

1. Unless otherwise indicated, the construction and operation of the subject agricultural chemicals production facilities shall be in accordance with the capacities and specifications stated in the application. **[Rule 62-210.300, F.A.C.]**

2. The subject emissions units shall comply with all applicable provisions for Sulfuric Acid Plants, Subpart H, as applicable. **[Rule 62-204.800 F.A.C.]**

3. The maximum operation rates for C and D SAPs, each, shall not exceed 2,750 TPD 100% H_2SO_4. **[Rule 62-210.200, F.A.C. (Definitions - Potential Emissions)]**

4. The maximum molten sulfur utilization rate for the C and D SAPs, each, shall neither exceed 898 TPD nor 327,755 TPY. (Based on the maximum permitted sulfuric acid production rate of 2,750 TPD of 100% H_2SO_4)
[Rule 62-210.200, F.A.C. (Definitions - Potential Emissions)]

SECTION III. EMISSION UNIT(S) SPECIFIC CONDITIONS

5. The subject emission units are allowed to operate continuously (8760 hours/year). **[Rule 62-210.200, F.A.C. (Definitions - Potential Emissions)]**

6. Sulfur dioxide (SO_2) emissions shall not exceed the following values for each sulfuric acid plant: **[Rule 62-212.400, F.A.C.]**:

Sulfuric Acid Plant	lb/ton of 100% H_2SO_4 *	lb/hr *	TPY
"C"	3.5	401	1,757
"D"	3.5	401	1,757

* 3-hour rolling average based on CEMS data as described below.

7. Sulfuric acid mist emissions shall not exceed the following for each plant. **[Rule 62-210.200, F.A.C.]**:

Sulfuric Acid Plant	lb/ton of 100% H_2SO_4 *	lb/hr *	TPY
"C"	0.10	11	50
"D"	0.10	11	50

* In stack testing as described below.

8. Emissions of nitrogen oxides from "C" and "D" Sulfuric Acid Plants, each, shall not exceed 0.12 lb/ton 100% H_2SO_4, 14 lb/hr and 60 tpy. **[Rule 62-212.400, F.A.C.]**

9. Visible emissions shall not exceed 10 percent opacity from the sulfuric acid plants. **[Rule 62-212.400, F.A.C.]**

10. The permittee shall install approximately 165,000 liters of cesium promoted vanadium catalyst in the 4th converter pass of the "C" and 'D" sulfuric acid plants. A change to non-cesium promoted catalyst or switch to another SO_2 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.]**

11. Best operational practices to minimize leaks of sulfur dioxide and sulfur trioxide, or other fugitive process emissions shall be adhered to and shall include regular inspections and prompt repair or correction of any leaks or other fugitive emissions. **[Rule 62-296.320, F.A.C.]**

12. Sulfuric acid plants are authorized to emit excess emissions from start-up for a period of three consecutive hours provided best operational practices to minimize emissions, in accordance with the agreement titled "Best Operational Start-Up Practices For Sulfuric Acid Plants" is followed. The provisions of the agreement issued by the Department are hereby added to this permit as Appendix A and shall be added to the Title V permit. **[Rule 62-210.700, F.A.C., 40 CFR 60.7]**

13. A continuous emissions monitoring system (CEMS) shall be installed, calibrated, maintained, operated, and used to determine compliance with the 3-hour rolling average emissions limit for SO_2. 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 (2001 version) or other Department-approved QA plan; 40 CFR 60, Appendix B, Performance Specification 2 (2001 version).

    The CEMS shall calculate and record emission rates in units of pounds SO_2 per ton of 100 percent sulfuric acid produced. Each operating day, the rolling averages of the SO_2 emission rate for the 3 hours shall be calculated and recorded. Emissions shall be calculated in units of pounds of SO_2 per ton of 100 percent acid produced using one of the methods specified in 40 CFR 60.84. Averages are to be calculated as the arithmetic mean of each monitored operating hour in which sulfur is burned in the unit and at least two emission measurements are recorded at least 15 minutes apart. Data taken during periods of startup, or when sulfur is not burned in the unit, or when the CEMS is out of control as defined in 40 CFR 60, Appendix F, Section 5.2, shall be excluded from the 3-hour rolling averages. Data recorded during periods of shutdown, malfunction, load change, and continuous operating periods shall be included in the calculation of the 3-hour rolling averages.

    To the extent the monitoring system is available to record emissions data, the CEMS shall be operated and shall record data at all operating hours when sulfur is burned in the unit, including periods of startup, shutdown, load change, continuous operation and malfunction. Monitor downtimes and excess emissions based on 3-hour averages, 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 duration of excess emissions is 1% or greater or if the monitoring system downtime is 5% greater of the total monitored operating hours.

    The monitoring 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 30 days prior to installation of a new CEMS. **[Rules 62-4.070(3), F.A.C. and 62-204.800, F.A.C.]**

14. The subject emission units shall be tested for compliance with the above emission limits within 60 days following achievement of 2475 tons per day of sulfuric acid or within 180 days following the startup after installing the cesium promoted vanadium catalyst, whichever is sooner. For the duration of all tests the emission unit shall be operating at permitted capacity. Permitted capacity is defined as 90-100 percent of the maximum operating rate allowed by the permit. If it is impracticable to test at permitted capacity, then the emission unit may be tested at less than permitted capacity (i.e., 90% of the maximum operating rate allowed by the permit); in

this case, subsequent emission unit operation is limited to 110 percent of the test load until a new test is conducted. Once the emission unit is so limited, then operation at higher capacities is allowed for no more than 30 consecutive days for the purposes of additional compliance testing to regain the permitted capacity in the permit. **[Rule 62-297.310, F.A.C.]**

15. The Department's Southwest District office and Environmental Protection Commission of Hillsborough County (EPCHC) in Tampa shall be notified in writing at least 15 days prior to the compliance tests. Written reports of the test results shall be submitted to those offices within 45 days of test completion. **[Rule 62-297.310, F.A.C.]**

16. The procedures for the initial compliance and annual compliance tests for SO_2, NO_X and sulfuric acid mist, shall be in accordance with EPA Reference Methods 1, 2, 3, 4, 6C, 7E, 8 and 9, as appropriate, as published in 40 CFR 60, Appendix A. **[Rules 62-204.800 and 62-297.310(7)(c), F.A.C.]**

17. All measurements, records, and other data required to be maintained by this facility 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 the Department upon request. **[Rule 62-4.070(3), F.A.C.]**

18. 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.]**

19. 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.]**

20. 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.]**

SECTION III. EMISSION UNIT(S) SPECIFIC CONDITIONS

21. The permittee shall submit an Annual Operating Report using DEP Form 62-210.900(4) to the Department's Southwest District office and EPCHC by March 1 of the following year for the previous year's operation. **[Rule 62-210.370, F.A.C.]**

22. The permittee shall submit to the Bureau of Air Regulation (BAR) SO_2 emissions data for both "C" and "D" Sulfuric Acid Plants on a quarterly basis. The data submitted shall be SO_2 CEMS 3-hour rolling averages data. It shall be submitted in a graphical presentation against time. The production rate for each plant shall also be indicated on the same graph. The data shall be submitted for a period of three years (12 quarters) after start-up of each plant. The anticipated start-up date for the "C" SAP shall be in the summer of 2004. The anticipated start-up date for the D SAP shall be in the fall of 2004. The permittee shall notify the Bureau of Air Regulation of any changes to the construction activities schedule that would affect the applicability of this requirement. **[Rule 62-212.400, F.A.C.]**

23. Approval to construct shall become invalid if construction is not commenced within 18 months after receipt of such approval, if construction is discontinued for a period of 18 months or more, or if construction is not completed within a reasonable time. The Department may extend the 18-month period upon a satisfactory showing that an extension is justified.

24. In conjunction with extension of the 18-month periods to commence or continue construction, or extension of the permit expiration date, the permittee may be required to demonstrate the adequacy of any previous determination of best available control technology for the source.

25. An application for a Title V permit revision shall be submitted, upon completion of construction, pursuant to Chapter 62-213, FAC, to the Department's Southwest District Office. **[Rule 62-213, F.A.C.]**

APPENDIX A
BEST OPERATIONAL START-UP PRACTICES FOR SULFURIC ACID PLANTS

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1. Only one sulfuric acid plant at a facility should be started up and burning sulfur at a time. There are times when it will be acceptable for more than one sulfuric acid plant to be in the start-up mode at the same time, provided the following condition is met. It is not acceptable to initiate sulfur burning at one sulfuric acid plant when another plant at the same facility is emitting SO_2 at a rate in excess of the emission limits imposed by the permit or rule, as determined by the CEMs emission rates for the immediately preceding 20 minutes.

2. A plant start-up must be at the lowest practicable operating rate, not to exceed 70 percent of the designated operating rate, until the SO_2 monitor indicates compliance. Because production rate is difficult to measure during start-up, if a more appropriate indicator (such as blower pressure, furnace temperature, gas strength, blower speed, number of sulfur guns operating, etc.) can be documented, tested and validated, the Department will accept this in lieu of directly documenting of the suitable list of surrogate parameters to demonstrate and document the reduced operating rate on a plant-by-plant basis. Documentation that the plant is conducting start-up at the reduced rate is the responsibility of the owner or operator.

3. Sulfuric acid plants are authorized to emit excess emissions from start-up for a period of three consecutive hours provided best operational practices, in accordance with this agreement, to minimize emissions are followed. No plant shall be operated (with sulfur as fuel) out of compliance for more than three consecutive hours. Thereafter, the plant shall be shut down. the plant shall be shut down (cease burning sulfur) if, as indicated by the continuous emission monitoring system, the plant is not in compliance within three hours of startup. Restart may occur as soon as practicable following any needed repairs or adjustments, provided the corrective action is taken and properly documented.

4. Cold Start-Up Procedures.

   a. Converter.

      (1) The inlet and outlet temperature at the first two masses of catalyst shall be sufficiently high to provide immediate ignition when SO_2 enters the masses. In no event shall the inlet temperature to the first mass be less than 800°F or the outlet temperature to the first two masses be less than 700°F. These temperatures are the desired temperatures at the time the use of auxiliary fuel is terminated.

(2) The gas stream entering the converter shall contain SO_2 at a level less than normal, and sufficiently low to promote catalytic conversion to SO_3.

b. Absorbing Towers.

The concentration., temperature and flow of circulating acid shall be as near to normal conditions as reasonably can be achieved. In no event shall the concentration be less than 96 percent H_2SO_4.

5. Warm Restart.

a. Converter

The inlet and outlet temperatures of the first two catalyst masses should be sufficiently high to ensure conversion. One of the following three conditions must be met:

(1) The first two catalyst masses inlet and outlet temperatures must be at a minimum of 700°F; or

(2) Two of the four inlet and outlet temperatures must be greater than or equal to 800°F; or

(3) The inlet temperature of the first catalyst must be greater than or equal to 600°F and the outlet temperature greater than or equal to 800°F. Also, the inlet and outlet temperatures of the second catalyst must be greater than or equal to 700°F.

Failure to meet one of the above conditions, requires use of cold start-up procedures.

To allow for technologies improvements or individual plant conditions, alternative conditions will be considered by the Department in appropriate cases.

b. Absorbing Towers.

The concentration., temperature and flow of circulating acid shall be as near to normal conditions as reasonably can be achieved. In no event shall the concentration be less than 96 percent H_2SO_4.

APPENDIX BD
BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION (BACT)

CF Industries, Inc.
Plant City Phosphate Complex
PSD-FL-339 / 0570005-019-AC
Hillsborough County

The project proposed by CF Industries, Inc. will increase the permitted production rate of the existing "C" and "D" Sulfuric Acid Plants (SAPs) from 2,600 to 2,750 tons per day. Several improvements to increase production capacity of the "C" and "D" SAPs are proposed, including:

- Replacement of potassium or sodium promoted vanadium catalyst with installation of cesium promoted vanadium catalyst;
- Replacement of the "C" SAP final and drying absorption tower packing with low pressure drop packing;
- Installation of a new tube side bypass on the No. 3 cold gas heat exchanger;
- Installation of a bypass around the superheater/economizer, replacement of the existing No. 1 cross flow hot gas heat exchanger with a low pressure drop radial heat exchanger; and
- Installation of onsite oxygen generation, storage, and injection equipment suitable.

To accommodate the increase in sulfuric acid production, CF Industries is also requesting an increase in the maximum throughput rate of the Molten Sulfur Storage and Handling System from 930,750 tons per year (TPY) to 965,388 TPY. There will be no physical changes to the Molten Sulfur Storage and Handling System as part of this project. Only the permitted annual throughput rate will increase.

The proposed modification will result in a significant increase in emissions of sulfur dioxide (SO_2), sulfuric acid mist (SAM) and nitrogen oxides (NO_x). The project is subject to Prevention of Significant Deterioration (PSD) review 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. Descriptions of the process, project, air quality effects, and rule applicability are given in the Technical Evaluation and Preliminary Determination, accompanying the Department's Intent to Issue.

DATE OF RECEIPT OF COMPLETE BACT APPLICATION:

Original application received on January 22, 2004. BACT application was complete on April 20, 2004.

BACT DETERMINATION PROCEDURE:

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 what 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 the following:

- 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 and 63 - 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:

- ***Combustion Products*** (SO_2, NO_X, PM). Controlled generally by good combustion of clean fuels.
- ***Products of Incomplete Combustion*** (CO, VOC). Controlled generally by proper combustion.

Grouping the pollutants in this manner facilitates the BACT analysis because it enables the equipment available to control the type or group of pollutants emitted 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, SO_2, H_2SO_4, 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 EMISSION LIMITS PROPOSED BY APPLICANT:

The applicant proposed the following emission limits from the "C" and "D" sulfuric acid plants.

POLLUTANT	EMISSION LIMIT (lb/hr)	LIMIT BASIS (lb/ton H_2SO_4)	CONTROL TECHNOLOGY
SO_2	441	3.5; 24-hr basis 3.85; 3-hr basis	Double Absorption Process
SAM	11	0.10	Fiber Mist Eliminators
NO_x	16	0.14	Good Combustion Practice

The applicant has proposed to use the existing double absorption process and incorporation of cesium promoted catalyst in the entire 4th pass of the converter to achieve the proposed limits for the sulfuric acid plants.

BACT POLLUTANT ANALYSIS

The process by which sulfuric acid is produced is the same process by which SO_2 and sulfuric acid emissions are controlled.

The SAPs utilize double absorption technology. Molten sulfur with physical characteristics much like fuel oil sulfur is burned in a furnace with dried atmospheric oxygen to produce SO_2. The SO_2 is catalytically oxidized to sulfur trioxide (SO_3) over a bed of vanadium pentoxide. The SO_3 is then absorbed in a recirculating stream of sulfuric acid (H_2SO_4) to produce additional H_2SO_4.

The remaining SO_2, not previously oxidized, is passed over a final converter bed of catalyst and the SO_3 produced is then absorbed in H_2SO_4 in a second absorber. SO_2 and sulfuric acid mist emissions result from the process, as well as a small amount of NO_x.

The control equipment for the SAPs consists of two systems in series. The first system is integral to the H_2SO_4 production process and is the double contact process where the converted SO_3 emissions from the sulfur combustion are absorbed by water in a tower. This process is at least 99 percent efficient at absorbing SO_3. This system is considered process equipment and not considered control equipment. The second system is a high-velocity mist eliminator, which causes moisture (droplets containing sulfuric acid mist) from the double-contact process to be removed from the air stream by impingement. This process is at least 90 percent efficient at removing SAM from the air stream and, therefore, recovering the product.

The proposed project includes an increase in the production rate of the existing "C" and "D" SAPs to 2,750 tons per day, each. It involves upgrading and/or replacement of plant equipment to accomplish the production increases, as described in the permit application. The primary improvement will be the incorporation of cesium promoted vanadium catalyst into the 4th pass of the converter (beds 4a and 4b).

Cesium promotion allows operation at lower temperature and thus a more complete approach to equilibrium in the final pass (i.e. more SO_2 gets converted to SO_3). The particular formulations

available in recent years have optimized shapes that are basically hollow cylinders with ribbed sides. They have star, daisy, or asterisk shapes when viewed from the end. They also have greater vanadium concentration than conventional catalysts.

The result is that installation of this catalyst allows greater production due to lower operating pressure and temperature, and higher activity. If production is not increased, the catalyst allows for lower emissions. Emissions increase on a lb/hr basis and on a lb/ton of product basis. Therefore a lb/ton limit directly affects maximum production.

In a modification for the purpose of increasing production, a balance is required so that the benefits of the more effective catalyst do not accrue only to production or only to lower emissions which would defeat the purpose of the modification.

According to the applicant, "C" SAP will undergo turnaround initially in the first week of June 2004. CF Industries, Inc. has selected Haldor Topsoe to provide the cesium promoted catalyst for "C" SAP. The cesium catalyst product is a VK69 12mm daisy design product. In quoting from a letter from Haldor Topsoe to the applicant dated April 7, 2004, "Our modeling indicates that with 165,000 liters of VK69 cesium catalyst installed in the 4A and 4B converter beds the emissions at the start of run immediately after a turnaround would be 3.12 lbs of SO_2 per ton of acid produced and after 3 years at the end of a turnaround cycle the emissions would be 3.43 lbs of SO_2 per ton of acid produced".

Based on this analysis, the Department has reasonable assurance that the "C" SAP can meet a ***BACT limit of 3.5 lbs of SO_2 per ton of 100% acid, 3-hour rolling average.*** This is less than the present NSPS based limit of 4 lb/ton applicable to the "C" SAP.

According to the applicant the "D" SAP will be undergoing turnaround in the fall of 2004. They have requested that they should be given the option of utilizing other catalyst vendors and products if those vendors can guarantee equal or better performance than the Haldor Topsoe product. The Department has no objection to that request, as long as the applicant installs 165,000 liters of cesium promoted catalyst in the 4th pass of the "D" SAP converter and meets the same ***BACT limit of 3.5 lbs of SO_2 per ton of 100% acid, 3-hour rolling average.***

In an effort to determine the performance of an acid plant utilizing cesium promoted catalyst in the entire 4th pass of a converter, the Department will require the applicant to provide continuous emission monitor results on a quarterly basis for three years (turnaround cycle) for both "C" and "D" SAPs. The data can be presented in a graphical representation against time, indicating the production rate as well as 3-hour rolling averages of SO_2 emissions. This requirement will be included as a specific condition in the permit. The data can be used by the Department for any future SO_2 BACT determinations of sulfuric acid plants.

Recent SAM compliance test data for "C" and "D" SAPs indicates that the average SAM emissions are between 0.03 and 0.05 lb/ton. These SAM levels are less than the proposed allowable emissions of 0.10 lb/ton for the "C" and "D" SAPs. For reference the present limit is 0.15 lb SAM/ton in accordance with the NSPS for sulfuric acid plants. High efficiency mist eliminators will be used to achieve the BACT emission limit for SAM.

The applicant accepted the NOx emission limit of 0.12 lb/ton of acid produced. This is the current BACT limit established for other acid plants. The Department agrees with the applicant that continued use of good combustion practices is considered BACT for NOx.

Control options involving production of by-products or wastes have been rejected as BACT. There is no indication that add-on control methods are competitive with process improvements that result in production of additional sulfuric acid. Recovery of sulfuric acid mist is an economic necessity as well as an environmental requirement.

BACT DETERMINATION BY THE DEPARTMENT:

Based on the information provided by the applicant, the above analysis and other information available to the Department, the following emission limits are established employing the top-down BACT approach.

The proposed BACT for SO_2 for the "C" and "D" SAPs is the current double-absorption system with the addition of 165,000 liters of Haldor Topsoe cesium catalyst in the 4th pass of the "C" SAP converter and equivalent cesium catalyst that guarantees equal or better performance than Topsoe's product for the "D" SAP. The proposed BACT limit for "C" and "D" SAP is 3.5 lbs of SO_2 per ton of 100% H_2SO_4, 3-hour rolling average.

This determination is applicable only to the present project and does not represent a BACT determination for a greenfield site or a new unit at a brownfield site. Such a new project would have to consider all process options and a thorough cost-effectiveness evaluation on the basis of cost per ton of SO_2 removed.

The proposed BACT for SAM emissions is the use of high-efficiency mist eliminators. The proposed emission limit for the "C" and "D" SAP is 0.10 lbs of SAM per ton of 100% H_2SO_4. The proposed emission limit is reasonable based on previous BACT determinations, and is consistent with currently established BACT, based on recent PSD permits.

The proposed BACT for NOx emissions is the continued use of good combustion practices. The proposed NOx emission limit is 0.12 lbs of NOx per ton of 100% H_2SO_4.

POLLUTANT	EMISSION LIMIT (lb/hr)	LIMIT BASIS (lb/ton H_2SO_4)	CONTROL TECHNOLOGY
SO_2	401	3.5 3-hr rolling average	Double Absorption Process, cesium-promoted vanadium catalyst in the entire 4th bed.
SAM	11	0.10	Fiber Mist Eliminators
NO_x	14	0.12	Good Combustion Practice

COMPLIANCE:

Compliance with the sulfur dioxide emission limit (3.5 lb/ton, 3-hour rolling average) shall be demonstrated with a certified continuous emission monitor. Start-up excess emissions shall be permitted for three hours for the sulfuric acid plants as endorsed in an agreement titled "Best Operational Start-Up Practices For Sulfuric Acid Plants", which is attached as Appendix A of the permit.

Annual compliance testing with the sulfur dioxide, sulfuric acid mist and nitrogen oxides limits shall be demonstrated using EPA Reference Methods 1, 2, 3, 4, 6C, 7E, 8 and 9 as appropriate, and contained in 40 CFR 60, Appendix A.

DETAILS OF THE ANALYSIS MAY BE OBTAINED BY CONTACTING:

Syed Arif, P.E., Permit Engineer Syed Arif
Department of Environmental Protection
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Recommended By:

Trina L. Vielhauer, Chief
Bureau of Air Regulation

June 1, 2004
Date:

Approved By:

Michael G. Cooke, Director
Division of Air Resources Management

June 1, 2004
Date:

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.

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 extend 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 *(X)*.

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.

U.S. Postal Service

CERTIFIED MAIL RECEIPT

(Domestic Mail Only; No Insurance Coverage Provided)

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