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DER-BAQM

August 7, 1990

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

Re: Gardinier, Inc. Hillsborough County  
Sulfuric Acid Plants No. 7 and No. 8

Dear Mr. Fancy:

This correspondence is in regards to the No. 7 and No. 8 Sulfuric Acid plants located at Gardinier, Inc., Hillsborough County. It is requested that the visible emissions limitation set forth in the most recent construction permits for these two sources be revised. A discussion of the permitting history of each source and the visible emission (VE) limitations is presented below.

No. 7 Sulfuric Acid Plant

The No. 7 Sulfuric Acid plant received a federal and state PSD permit in 1985 (AC29-089697). This permit authorized the increase in production rate from 1,750 tons per day (TPD) to 2,200 TPD. The VE opacity limitation determined as BACT for the expansion was the Hillsborough County rule contained in Chapter 1-3.30 V.l.c. This rule allowed 5% opacity, with the exception that up to 40% opacity was allowed for 30 minute periods during plant startups. It appears that the sole basis for the BACT determination was the Hillsborough County rule. Since the limit was a rule, Gardinier in essence could not challenge the BACT determination at that time. It is noted that the Hillsborough VE regulation was more stringent than Florida's regulation, which limited VE to 10%.

In August 1985, Gardinier received the initial operating permit for the sulfuric acid expansion (A029-104895). The VE limit in the permit was 5% opacity for any 6-minute consecutive period. This limit was somewhat different than limit stated in the construction permit.

Subsequent to this permit issuance, Hillsborough County rewrote portions of their air quality regulations, and in 1986 revised their VE regulation to conform to the state regulation. The new rule was codified in Chapter 1-3-63(a), and allowed 10% opacity except for a thirty minute period during plant startup, during which time 40% opacity is allowed. This rule is currently in effect in Hillsborough County.

As a result of the change in the Hillsborough County VE rule, in mid-1986 the Hillsborough County Environmental Protection Commission initiated efforts to revise the operating permit to be consistent with the Hillsborough County rule. DER subsequently revised the permit in a letter dated August 22, 1986, which amended Specific Condition 3/c of the permit to 10% opacity, except that up to 40% is allowed for a thirty minute period during plant startup.

KBN ENGINEERING AND APPLIED SCIENCES, INC.

1034 Northwest 57th Street, Gainesville, Florida 32605 904/331-9000 FAX: 904/332-4189



Gardinier was recently issued an operating permit renewal for No. 7 Sulfuric Acid plant. The new permit (A029-178406), in Specific Condition 5, limits VE to 10% opacity. Specific Condition 8 of the permit contains provisions for excess emissions during times of startup, shutdown or malfunction. In addition, Specific Condition 23 requires that Gardinier apply to FDER's Bureau of Air Regulation in Tallahassee to request an amendment to Specific Condition 4 of the construction permit (AC29-89697) to be consistent with Specific Condition 5 of the operating permit. This condition reflects both Hillsborough County's and FDER Tampa's recognition that the construction permit needs to be amended, and that they believe the proper opacity limit is 10%.

Review  
S.C. # 4  
(See  
8/12/86  
Review  
trans)

Amend  
BACT

Gardinier is requesting that the original BACT determination for VE of 5% opacity contained in the construction permit AC29-089697 be amended to reflect the 10% opacity limit that has been written into the operating permits for the source since 1986. This is also the current state and Hillsborough County limits for VE. It appears that the sole basis for the original BACT determination was the old Hillsborough County rule, so it is appropriate to revise the BACT based on the revised rule. Hillsborough County and FDER Tampa are in agreement with this request.

No. 8 Sulfuric Acid Plant

The No. 8 Sulfuric Acid plant received a federal and state PSD permit in 1985 (AC29-089696) and again in 1987 (AC29-089696). These permits authorized the increase in production rate from 1,784 TPD to 2,200 TPD and 2,500 TPD, respectively. The VE opacity limitation determined as BACT for the 1985 expansion was the 5% opacity limitation contained in Hillsborough County Rule Chapter 1-3-30 V1.c. This BACT was determined jointly with the No. 7 Sulfuric Acid plant expansion in 1985. Again, it appears that the sole basis for the BACT determination was the Hillsborough County rule.

WRONG  
PERMIT  
NUMBER

The BACT for the second plant expansion in 1987 was also 5% VE. FDER again referred to the Hillsborough County rule Chapter 1-3-03-V1.C as the sole justification for the limit. Apparently, the state was following the previous BACT determination for the source, and did not recognize that the Hillsborough County rule had been revised in 1986 to 10% opacity. However, the limit was corrected in the operating permit subsequently issued (A029-162411) in October 1989. The VE limitation in Specific Condition 2 of this permit quotes the revised Hillsborough County rule of 10% opacity and references the rule citation.

AD  
BACT  
TO  
10%  
opacity

Gardinier is therefore, requesting that the original BACT determination for VE of 5% opacity contained in the construction permit AC29-089696 for No. 8 Sulfuric Acid plant be amended to reflect the 10% opacity limit that has been written into the operating permit for the source. This is also the current state and Hillsborough County limits for VE. It appears that the sole basis for the original BACT determination was the old Hillsborough County rule, so it is appropriate to revise the BACT based on the revised rule.

If this request is approved, the VE limitation for all three sulfuric acid plants at Gardinier would be the same (10%), and would be consistent with the Hillsborough County and FDER VE limits for sulfuric acid plants.



If you should have any questions concerning the above requests, please do not hesitate to contact me.

Sincerely,

*David A. Buff*

David A. Buff, M.E., P.E.  
Principal Engineer

cc: Ozzie Morris

*J. Hanks*

*B. Andrews*

*B. Thomas*

*J. Campbell*

NSPS FOR H<sub>2</sub>SO<sub>4</sub> PLTS, SUB. H.

10% OPACITY (NO REF METHOD SPECIFIED)

Best Available Control Technology (BACT) Determination  
Gardinier, Inc.  
Hillsborough County

Gardinier, Inc. plans to increase the production rate of the No. 8 sulfuric acid plant that is located at their Tampa phosphate fertilizer chemical complex. Production of the No. 8 sulfuric acid plant will be increased from 2200 TPD to 2500 TPD. No restrictions to limit the hours of operation has been requested.

Increased production of the sulfuric acid plant will result in more air pollutants being emitted to the atmosphere. The primary air pollutants emitted from a sulfuric acid plant are sulfur dioxide (SO<sub>2</sub>) and acid mist. The amount of sulfur dioxide emitted to the atmosphere is an inverse function of sulfur conversion efficiency. When sulfur trioxide combines with water vapor at a temperature below the dew point of sulfur trioxide, acid mist is formed. The amount of acid mist is usually dependent upon the type of sulfur feedstock, the strength of acid produced and the operational parameters in the absorber. Based on permitted emissions, the net increase in air pollutant emissions would be 219 tons of sulfur dioxide (SO<sub>2</sub>) and 8.2 tons of acid mist per year.

Under the regulations, in Florida Administrative Code (FAC) Rule 17-2, the increase in sulfur dioxide and acid mist emissions exceed the significant emission rates as listed in Table 500-2. A BACT determination, therefore, is required for the regulated air pollutants sulfur dioxide and acid mist.

BACT Determination Request by the Applicant:

The air pollutant emissions from the No. 8 sulfuric acid plant would be limited to 4.0 pounds of sulfur dioxide (SO<sub>2</sub>) and 0.15 pounds of acid mist per ton of 100% acid produced.

Date of Receipt of a BACT Application:

February 9, 1987

Date of Publication in Florida Administrative Weekly:

May 15, 1987

Review Group Members:

The determination was based upon comments received from the Stationary Source Control Section, Air Modeling and Data Analysis Section, the Southwest District Office, and the Hillsborough County Environmental Protection Commission.

BACT Determined by DER:

Sulfuric Acid Plant No. 8:

| Pollutant                         | Emission Limit  |
|-----------------------------------|---|
| Sulfur Dioxide (SO <sub>2</sub> ) | Not to exceed 4 pounds per ton of 100% acid produced    |
| Acid Mist <sup>(1)</sup>          | Not to exceed 0.15 pounds per ton of 100% acid produced |
| Visible Emissions                 | 5% opacity maximum                                      |

(1) Acid mist means sulfuric acid mist, as measured by EPA Method 8, 40 CFR 60, Appendix A.

Compliance with the emission limits will be in accordance with the test methods and procedures prescribed in subsection 40 CFR 60.85, Subpart H, New Source Performance Standards.

EPA Method 9, 40 CFR 60, Appendix A, will be used to determine compliance with the visible emission limit.

BACT Determination Rationale:

FAC Rule 17-2.100(117) defines "modification" as any physical change in, or change in the method of operation of, or addition to a stationary facility which increase the actual emissions of any air pollutant, regulated under this Chapter, including any not previously emitted, from any source within such facility.

If the increase in emissions as a result of the major source modification are equal to or greater than the significant emission rates listed in Table 500-2, Regulated Air Pollutants - Significant Emission Rates; a Best Available Control Technology (BACT) determination is required, Rule 17-2.500(5)(c). In no event shall application of BACT result in emissions of any pollutant which would exceed the emissions allowed under 40 CFR part 60 - New Source Performance Standards (NSPS), FAC Rule 17-2.630(1)(a).

Sulfuric acid plants are subject to the provisions of the New Source Performance Standards, 40 CFR 60.80, Subpart H. The standards under Subpart H are; 4.0 pounds of SO<sub>2</sub> per ton of acid produced and 0.15 pound of acid mist per ton of acid produced, expressed as 100 percent sulfuric acid. The visible emissions limit is less than 10 percent opacity.

The NSPS standards, Subpart H, were reviewed by EPA in 1979 and EPA concluded that from the standpoint of technology, and considering costs, and the small quantity of emissions in question, that it did not appear necessary to revise the standards. The Department has reviewed the test results obtained from several different sulfuric acid plants and concurs with EPA's conclusion. The provisions of Subpart H are judged to be BACT.

The visible emissions limitation determined as BACT is equal to Hillsborough County's requirement as per Chapter 1-3.03 V.L.C - visible emissions shall not exceed 5% opacity except for 30 minute periods during plant startups when opacity shall be no greater than 40%.

The air quality impact of the proposed emissions has been analyzed. Atmospheric dispersion modeling has been completed and used in conjunction with an analysis of existing air quality to determine maximum ground-level ambient concentrations of the pollutants subject to BACT. Based on these analyses, the Department has reasonable assurance that the proposed sulfuric acid plant modifications, subject to these BACT emission limitations, will not cause or contribute to a violation of the PSD increment or ambient air quality standard.

Details of the Analysis may be Obtained by Contacting:

Bob E. Daugherty  
Department of Environmental Regulation  
Bureau of Air Quality Management  
2600 Blair Stone Road  
Tallahassee, Florida 32399-2400

Recommended by:

*pc* John C. Brown Jr  
C. H. Fancy, Deputy Bureau Chief

Date: July 20, 1987

Approved by:

Dale Twachtman  
Dale Twachtman, Secretary

Date: 7/22/87

Original BACT

Best Available Control Technology (BACT) Determination  
Gardinier, Inc.  
Hillsborough County

The applicant plans to increase the product rate from their Number 7 and Number 8 sulfuric acid plants that are located at their Tampa phosphate fertilizer complex. The production of sulfuric acid from the No. 7 plant will be increased from 1750 tons per day (TPD) to 2200 TPD, and the No. 8 plant from 1770 TPD also to 2200 TPD. No restrictions to limit the hours of operation of either plant has been requested.

Increasing the product output from the two sulfuric acid plants will also result in more air pollutants being emitted to the atmosphere. The air pollutants emitted from a sulfuric acid plant are sulfur dioxide (SO<sub>2</sub>) and acid mist. The amount of SO<sub>2</sub> emitted to the atmosphere is an inverse function of sulfur conversion efficiency. When sulfur trioxide combines with water vapor at a temperature below the dew point of sulfur trioxide, acid mist is formed. The amount of acid mist is usually dependent upon the type of sulfur feedstock, the strength of acid produced, and the operational parameters in the absorber. Based upon the applicant's data, the net increase in air pollutant emissions would be 2327 tons of SO<sub>2</sub> and 92 tons of acid mist per year.

Under the regulations in Chapter 17-2, Florida Administrative Code, the increase in SO<sub>2</sub> and acid mist emissions exceed the significant emission rates as listed in Table 500-2. A BACT determination, therefore, is required for the regulated air pollutants sulfur dioxide and acid mist.

BACT Determination Requested by the Applicant:

The air pollutant emissions from No. 7 sulfuric acid plant would be limited to 4 pounds of SO<sub>2</sub> and 0.15 pounds of acid mist per ton of 100% acid produced.

The air pollutant emissions from No. 8 sulfuric acid plant would be limited to 10 pounds of SO<sub>2</sub> and 0.30 pounds of acid mist per ton of 100% acid produced.

Date Receipt of a BACT application:

July 6, 1984

Date of Publication in the Florida Administrative Weekly:

July 27, 1984

Review Group Members:

The determination was based upon comments received from the Stationary Source Control Section, Air Modeling and Data Analysis Section, the Southwest District Office, and the Hillsborough County Environmental Protection Commission.

BACT Determined by DER:

Sulfuric Acid Plants No. 7 and No. 8

| Pollutant                         | Emission Limit  |
|-----------------------------------|---|
| Sulfur Dioxide (SO <sub>2</sub> ) | Not to exceed 4 pounds per ton of 100% acid produced    |
| Acid Mist <sup>[1]</sup>          | Not to exceed 0.15 pounds per ton of 100% acid produced |

Visible Emissions

5% opacity maximum

[1] Acid mist means sulfuric acid mist, as measured by Method 8 of 40 CFR 60, Appendix A.

Compliance with the emission limits will be in accordance with the test methods and procedures prescribed in subsection 60.85, Subpart H, New Source Performance Standards.

DER Method 9 (17-2.700(6)(a)9, FAC) will be used to determine compliance with the visible emission limit.

BACT Determination Rationale:

Florida Administrative Code Rule 17-2.100(105) defines "modification" as any physical change in, or addition to a stationary facility which increase the actual emissions of any air pollutant, regulated under this Chapter, including any not previously emitted, from any source within such facility.

If the increase in emissions as a result of the major source modification are equal to or greater than the significant emission rates listed in Table 500-2, Regulated Air Pollutants - Significant Emission Rates; a Best Available Control Technology (BACT) determination is required, Rule 17-2.500(5)(c). In no event shall application of BACT result in emissions of any pollutant which would exceed the emissions allowed under 40 CFR Part 60 - New Source Performance Standards (NSPS), Rule 17-2.630(1)(a).



Sulfuric acid plants are subject to the provisions of the New Source Performance Standards, 40 CFR 60.80, Subpart H. The standards under Subpart H are; 4.0 pounds of SO<sub>2</sub> per ton of acid produced and 0.15 pound of acid mist per ton of acid produced, expressed as 100 percent sulfuric acid. The visible emissions limit is less than 10 percent opacity.

The NSPS standards, Subpart H, were reviewed by EPA in 1979 and EPA concluded that from the standpoint of technology, and considering costs, and the small quantity of emissions in question, that it did not appear necessary to revise the standards. The department has reviewed the test results obtained from several different sulfuric acid plants and concurs with EPA's conclusion. The provisions of Subpart H are judged to be BACT.

The visible emissions limitation determined as BACT is equal to Hillsborough County's requirement as per Chapter 1-3.03 V1.C - visible emissions shall not exceed 5% opacity except for 30 minute periods during plant startups when opacity shall be no greater than 40%.

The air quality impact of the proposed emissions has been analyzed. Atmospheric dispersion modeling has been completed and used in conjunction with an analysis of existing air quality to determine maximum ground-level ambient concentrations of the pollutants subject to BACT. Based on these analyses, the department has reasonable assurance that the proposed sulfuric acid plant modifications, subject to the these BACT emission limitations, will not cause or contribute to a violation of the PSD increment or ambient air quality standard.

Details of the Analysis may be Obtained by Contacting:

Ed Palagyi  
Department of Environmental Regulation  
Bureau of Air Quality Management  
2600 Blair Stone Road  
Tallahassee, Florida 32301

Recommended by:

C. H. Fancy  
C. H. Fancy, Deputy Bureau Chief

Date: 2/8/85

Approved by:

Victoria J. Tschinkel  
Victoria J. Tschinkel, Secretary

Date: 2/12/85