

Facility Name: **C-E Minerals Plant 2**

City: Andersonville

County: Sumter

AIRS #: 04-13-261-00047

Application #: TV-15800 & 15933

Date Title V Application Received: November 4, 2004 & January 7, 2005

Permit No: 3255-261-0047-V-04-6

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Introduction

This narrative is being provided to assist the reader in understanding the content of the referenced SIP permit to construct and draft operating permit amendment. Complex issues and unusual items are explained in simpler terms and/or greater detail than is sometimes possible in the actual permit. This permit is being issued pursuant to: (1) Sections 391-3-1-.03(1) and 391-3-1-.03(10) of the Georgia Rules for Air Quality Control, (2) Part 70 of Chapter I of Title 40 of the Code of Federal Regulations, and (3) Title V of the Clean Air Act Amendments of 1990. The following narrative is designed to accompany the draft permit and is presented in the same general order as the permit. This narrative is intended only as an adjunct for the reviewer and has no legal standing. Any revisions made to the permit in response to comments received during the public comment period and EPA review process will be described in an addendum to this narrative.

I. Facility Description**A. Existing Permits**

Table 1 below lists the current Title V permit, and all administrative amendments, minor and significant modifications to that permit, and 502(b)(10) attachments. Comments are listed in Table 2 below.

Table 1: Current Title V Permit and Amendments

Permit/Amendment Number	Date of Issuance	Comments	
		Yes	No
3255-261-0047-V-04-0	December 19, 2002	✓	
3255-261-0047-V-04-1	October 20, 2004	✓	
3255-261-0047-V-04-2	January 19, 2005	✓	
3255-261-0047-V-04-3	March 9, 2005	✓	
3255-261-0047-V-04-4	May 16, 2005	✓	
3255-261-0047-V-04-5	August 17, 2005	✓	

Table 2: Comments on Specific Permits

Permit Number	Comments
3255-261-0047-V-04-0	Initial Title V Operating permit
3255-261-0047-V-04-1	Permit Amendment to resolve appeal of initial Title V operating permit
3255-261-0047-V-04-2	Permit amendment for relaxation of PSD avoidance limits on Emission Unit BC13, IC40, and IC43
3255-261-0047-V-04-3	Section 502(b)(10) Change for additional process equipment and the use of silane solution
3255-261-0047-V-04-4	Removal of hours of operation limitation for the IC Plant Jaw Crusher (I10), Barmac Crushing Circuit (I12), and Sizing and Bagging Operation (I13), the Rotary Dryer (BD2), Loading Chute (BD5) and increase of PM emissions for Barmac Crushing Circuit (I12) from 0.40 lbs/hr to 1.0 lbs/hr. Condition No. 3.2.2 is amended to delete applicability of limitations on the hours of operation for Emission Unit ID No. I10, I12, I13, BD2 and BD5 and authorize PM emissions increase. Condition Nos. 6.1.7 and 6.2.3 are amended accordingly. Condition 4.2.2 is added to require PM emission testing.
3255-261-0047-V-04-5	Section 502(b)(10) modify Condition 3.2.8 from facility-wide HAP limitation to a HAP limitation on Emission Units associated with the silane project.

B. Regulatory Status

1. PSD/NSR/RACT

C. E. Minerals Plant 1, Plant 2 and Plant 6 are considered to be part of the same site, which is a major source under PSD because its potential emissions of PM, PM₁₀, NO_x, and SO₂ are greater than 250 tpy (it is not one of the 28 named source categories under PSD).

The facility went through a PSD review in 1980 when three natural gas fired kilns (Emission Unit ID Nos. 1K, 2K, and 3K) were permitted to burn coal as a fuel and two new coal-fired kilns (Emission Unit ID Nos. 4K and 5K) were constructed. BACT for the kilns was determined to be the use of coal with a sulfur content of no greater than 1.0 percent, by weight. The BACT determination was modified in 1983 to allow for the use of coal with a weight percent of greater than 1.0 percent, by weight, as long as the hourly SO₂ emission rate from each kiln was at or below 80 pounds per hour. Therefore, the BACT limits for kilns 1K through 5K was amended to 80 pounds SO₂ per hour. Particulate matter (PM) emissions from kilns 4K and 5K were limited to 9.42 lbs/hr as BACT limits. In 1990, the BACT limits for kilns 1K, 4K, and 5K was amended from 80 pounds SO₂ per hour to 116 pounds SO₂ per hour to correct an error made in determining the emission limits. The emission limit of 80 pounds per hour of SO₂ did not take into account the SO₂ emissions due to the sulfur inherent in the clay processed in the kilns. The emission limitation of 116 pounds per hour SO₂ takes into account these emissions due to the clay. Kilns 2K and 3K remained at 80 lbs/hr SO₂. In 1992, the SO₂ emission limits for kilns 1K, 4K, and 5K were lowered to 80 pounds per hour for the purposes of air permit fee reduction.

2. Title V Major Source Status by Pollutant

Table 3: Title V Major Source Status

Pollutant	Is the Pollutant Emitted?	If emitted, what is the facility's Title V status for the Pollutant?		
		Major Source Status	Major Source Requesting SM Status	Non-Major Source Status
PM	Yes	✓		
PM ₁₀	Yes	✓		
SO ₂	Yes	✓		
VOC	Yes			✓
NO _x	Yes	✓		
CO	Yes	✓		
TRS	No			
H ₂ S	No			
Individual HAP	Yes			✓
Total HAPs	Yes			✓

II. Proposed Modification

A. Description of Modification

The facility has submitted an application for the increase in the SO₂ emission limitations for Kilns 1K, 2K, 3K, 4K, and 5K in Condition No. 3.2.1 from 80 pounds per hour to 116 pounds per hour. The SO₂ emissions from Kilns 1 through 5 are limited to 80 pounds per hour each. These limits were originally established as part of PSD permitting in 1980 and the SO₂ emissions from kilns 1K, 4K, and 5K were subsequently increased to 116 lb/hr in 1990 based on increment consumption analyses that assumed that only emissions from the use of coal were increment consuming for Kilns 1K through 3K since these kilns existed pre-baseline and that SO₂ emissions from the clay were considered part of the baseline. In 1992, the 116 lb/hr SO₂ allowable limits were reduced back to 80 lb/hr for the purposes of permit fee reduction. The Division has determined that the higher SO₂ emission rates (i.e. 116 lb/hr) should be allowed as long as compliance with NAAQS and the PSD increments for SO₂ is properly demonstrated through the appropriate dispersion modeling. The SO₂ emission rate increase for Kilns 2K and 3K should be allowed to be increased since the BACT is represented as an emission rate from each kiln of 116 lbs/hr. Kilns 2K and 3K were not increased to 116 lbs/hr SO₂ back in 1990 because the facility could not demonstrate full compliance with the PSD increment for SO₂ with Kilns 2K and 3K at 116 lbs/hr. This has since been remedied due to the increase in stack heights for kilns 2K and 3K. SO₂ is the only pollutant of concern regarding this proposed modification.

Air dispersion modeling was conducted by CE Minerals’ consultant, Smith Aldridge, Inc., to assess conformance of the proposed re-instatement of former SO₂ emission limits for two coal-fired kaolin kilns with current SO₂ PSD Increments and NAAQS. The reason for the present modeling analysis is to assure that the re-instated emission rates will not threaten an Increment or NAAQS due to other potential SO₂ emission sources which may have been permitted since the facility asked that the more stringent emission limits be imposed on these sources.

A significance test was conducted which resolved significant 24-hour averaged concentrations beyond 50 km. The significant impact area was assigned a radius of 50 km from the facility on that basis. An additional 50 km was added to the significant impact area as a ‘screening area’ in which major sources could contribute to CE Minerals’ SO₂ impacts. The significance modeling used thirteen sources on the CE Minerals site, instead of only the amount of increased SO₂ from the two sources in the application. The offsite SO₂ inventory compiled subsequent to the significance modeling involved 68 additional major sources offsite. Additional sources were screened from modeling based on the “20-D” technique.

The results of subsequent cumulative (inclusive of off-site source emissions) PSD Increment modeling demonstrates that the NAAQS and the PSD SO₂ increment will not be violated due to the increase in SO₂ emissions.

The following are the results of subsequent cumulative NAAQS and PSD increment modeling of SO₂ emissions:

Results of Cumulative NAAQS Modeling			Results of cumulative PSD Increment Modeling		
Modeling Result	NAAQS	Averaging time	Modeling Result	PSD Increment	Avg. Time
392.9	1300	3-hr	318.5	512	3-hr
128.5	365	24-hr	90.92	91	24-hr
21.5	80	Annual	17.7	20	Annual

Concentrations are in ug/m³

B. Emissions Change

Table 4: Emissions Change Due to Modification

Pollutant	Is the Pollutant Emitted?	Net Actual Emissions Increase (Decrease) (tpy)	Net Potential Emissions Increase (Decrease) (tpy)
PM	Yes	0.0	0.0
PM ₁₀	Yes	0.0	0.0
SO ₂	Yes	630 ¹	788.4 ²
VOC	Yes	0.0	0.0
NO _x	Yes	0.0	0.0
CO	Yes	0.0	0.0
TRS	No	N/A	N/A
H ₂ S	No	N/A	N/A
Individual HAP	Yes	0.0	0.0
Total HAPs	Yes	0.0	0.0

1 Based upon kilns 1K through 5K operating 7,000 hours per year.

$$\text{PM (actual)} = (116 \text{ lbs/hr} - 80 \text{ lbs/hr}) * (5 \text{ kilns}) * (7,000 \text{ hrs/yr})$$

2 PM (potential) = (116 lbs/hr – 80 lbs/hr)*(5 kilns)*(8,760 hrs/yr)

C. PSD/NSR Applicability

This increase in the SO₂ emission limitations for kilns 1K through 5K would not constitute a Title I modification since the emission limitations are being increased to the level to which they existed before they were lowered for permit fee reduction purposes.

III. Facility Wide Requirements

A. Emission and Operating Caps:

No new facility wide limits are being added or modified due to this permit modification.

B. Applicable Rules and Regulations

There are no applicable facility-wide rules or regulations that are applicable due to this modification.

C. Compliance Status

A review of the Division's files indicates that the facility is in compliance with all air quality regulations.

D. Operational Flexibility

The facility has not requested any operational flexibility per this application.

E. Permit Conditions

There are no facility-wide permit conditions associated with this permit amendment.

IV. Regulated Equipment Requirements

A. Brief Process Description

Plant 2 has five coal-fired process kilns (Emission Unit ID Nos. 1K, 2K, 3K, 4K and 5K). The SO₂ emission limitation for each kiln is being increased from 80 pounds per hour to 116 pounds per hour.

B. Equipment List for the Process

Table 3.1 has been updated. Kilns No.1 through No.5 are now shown to be subject to 40 CFR 52.21 PSD.

Emission Units		Specific Limitations/Requirements		Air Pollution Control Devices	
ID No.	Description	Applicable Requirements/Standards	Corresponding Permit Conditions	ID No.	Description
1K	Rotary Kiln No.1	391-3-1-.02(2)(b) 391-3-1-.02(2)(p) 391-3-1-.02(2)(g) 40 CFR 52.21 PSD	3.2.1, 3.4.1, 3.4.2, 3.4.3, 3.5.1, 3.5.2, 5.2.1, 5.2.2, 5.2.3, 5.2.4, 5.2.5, 5.2.7, 5.2.8, 5.2.9, 6.1.7, 6.2.4, 6.2.5, and 6.2.7	1KZ	Kiln Multi-tube Cyclone (1C) & Scrubber (1Z)
	Cooler No. 1			1KCC or IKCC & CBH4	Multicyclone or Multi-cyclone and Baghouses
2K	Rotary Kiln No.2	391-3-1-.02(2)(b) 391-3-1-.02(2)(p) 391-3-1-.02(2)(g) 40 CFR 52.21 PSD	3.2.1, 3.4.1, 3.4.2, 3.4.3, 3.5.1, 3.5.2, 5.2.1, 5.2.2, 5.2.3, 5.2.4, 5.2.5, 5.2.7, 5.2.8, 5.2.9, 6.1.7, 6.2.4, and 6.2.5	2KZ	Kiln Multi-tube Cyclone (2C) & Scrubber (2Z)
	Cooler No. 2			2KCC	Multicyclone
3K	Rotary Kiln No.3	391-3-1-.02(2)(b) 391-3-1-.02(2)(p) 391-3-1-.02(2)(g) 40 CFR 52.21 PSD	3.2.1, 3.4.1, 3.4.2, 3.4.3, 3.5.1, 3.5.2, 5.2.1, 5.2.2, 5.2.3, 5.2.4, 5.2.5, 5.2.7, 5.2.8, 5.2.9, 6.1.7, 6.2.4, and 6.2.5	3KZ	Kiln Multi-tube Cyclone (3C) & Scrubber (3Z)
	Cooler No. 3			3KCC	Multicyclone
4K	Rotary Kiln No.4	391-3-1-.02(2)(b) 391-3-1-.02(2)(p) 391-3-1-.02(2)(g) 40 CFR 52.21 PSD	3.2.1, 3.4.1, 3.4.2, 3.4.3, 3.5.1, 3.5.2, 5.2.1, 5.2.2, 5.2.3, 5.2.4, 5.2.5, 5.2.7, 5.2.8, 5.2.9, 6.1.7, 6.2.4, 6.2.5, and 6.2.7	4KZ	Kiln Multi-tube Cyclone (4C) & Scrubber (4Z)
	Cooler No. 4			4KCC or IKCC & CBH4	Multi- Cyclone or Multi-cyclone and Baghouses
5K	Kiln No. 5	391-3-1-.02(2)(b) 391-3-1-.02(2)(p) 391-3-1-.02(2)(g) 40 CFR 52.21 PSD	3.2.1, 3.4.1, 3.4.2, 3.4.3, 3.5.1, 3.5.2, 5.2.1, 5.2.2, 5.2.3, 5.2.4, 5.2.5, 5.2.7, 5.2.8, 5.2.9, 6.1.7, 6.2.4, and 6.2.5	5KZ	Kiln Multi-tube Cyclone (2C) & Scrubber (2Z)
	Cooler No. 5			5KCC	Cooler Multi-tube Cyclone

C. Equipment & Rule Applicability

Emission and Operating Caps :

Each of the kilns (Emission Unit ID No. 1K through 5K) is currently limited to 80 pounds of SO₂ per hour per Condition No. 3.2.1. This permit amendment will increase the SO₂ allowable from each kiln to 116 pounds per hour.

Kilns 4K and 5K are each limited to 9.42 lbs/hr of PM. These emission limits will not change as a result of this permit amendment.

D. Compliance Status

A review of the Division's files indicates that the facility is in compliance with all air quality regulations.

E. Operational Flexibility

The facility has not requested any operational flexibility per this application.

F. Permit Conditions

Condition No. 3.2.1 will be modified to increase the SO₂ emissions limitation for each kiln from 80 pounds per hour to 116 pounds per hour.

Condition 6.1.7 is being modified by increasing the excursion threshold for SO₂ concentration from 310 ppm to 450 ppm to represent the increase of SO₂ emission.

V. Testing Requirements (with Associated Record Keeping and Reporting)

No additional testing requirements are required as part of this permit amendment.

VI. Monitoring Requirements (with Associated Record Keeping and Reporting)

The facility currently monitors the scrubbing liquid flow rate and the pressure drop across the scrubbers (APCD ID Nos. 1KZ, 2KZ, 3KZ, 4KZ, and 5KZ) on a continuous basis (Condition No. 5.2.1). The facility is also required to perform a visible emissions check of the multicyclones (Condition No. 5.2.2). Condition No. 5.2.3 requires that the facility develop a preventative maintenance plan for each multicyclone controlling each kiln. The facility also directly monitors the SO₂ concentration from each kiln on a weekly basis (Condition No. 5.2.7) using a portable analyzer. The facility also monitors the pH of the scrubbing liquid for the kiln scrubbers (APCD ID Nos. 1KZ, 2KZ, 3KZ, 4KZ, and 5KZ) on a daily basis (Condition No. 5.2.8). These requirements represent periodic monitoring that is sufficient to demonstrate compliance with the BACT limits of 116 pounds SO₂ per hour. Therefore, no additional monitoring is being required by this permit amendment.

VII. Other Record Keeping and Reporting Requirements

The excursion threshold for the SO₂ concentration specified in Condition No. 6.1.7.c.iv is being increased from 310 ppm to 450 ppm. This increase represents the increase from 80 lbs/hr SO₂ to 116 lbs/hr SO₂.

No additional record keeping and reporting requirements are necessary per this permit amendment.

VIII. Specific Requirements

A. Operational Flexibility

The facility has not requested any additional operational flexibility per the permit modification.

B. Alternative Requirements

Not applicable for this permit amendment.

C. Insignificant Activities

No insignificant activities have been added as a result of this permit amendment.

D. Temporary Sources

No temporary sources have been added as a result of this permit amendment.

E. Short-Term Activities

No short-term activities are associated with this permit amendment.

F. Compliance Schedule/Progress Reports

The Division's files indicate that the facility is in compliance with all applicable air quality regulations.

G. Emissions Trading

Not applicable.

H. Acid Rain Requirements

Not applicable.

I. Prevention of Accidental Releases

This modification does not change the facility's applicability to Section 112(r) of the CAA.

J. Stratospheric Ozone Protection Requirements

This modification does not change the facility's applicability to Title VI of the CAA.

K. Pollution Prevention

Not applicable.

L. Specific Conditions

Not applicable.

Addendum to Narrative

The 30-day public review started on December 16, 2005 and ended on January 16, 2006. Comments were not received by the Division.