

Facility Name: **General Chemical LLC – Augusta Plant**
 City: Augusta
 County: Richmond
 AIRS #: 04-13-245-00008

Application #: TV-16281
 Date Application Received: July 11, 2005
 Permit No: 2819-245-0008-V-03-0

Program	Review Engineers	Review Managers
SSPP	Wendy Troemel	David Matos
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SSCP	Lewis Hays	Douglas Waldron
Toxics	N/A	N/A

Introduction

This narrative is being provided to assist the reader in understanding the content of the attached draft Part 70 operating permit. Complex issues and unusual items are explained herein simpler terms and/or greater detail than is sometimes possible in the actual permit. This permit is being issued pursuant to: (1) Georgia Air Quality Act, O.C.G.A § 12-9-1, et seq. and (2) Georgia Rules for Air Quality Control, Chapter 391-3-1, and (3) Title V of the Clean Air Act. Section 391-3-1-.03(10) of the Georgia Rules for Air Quality Control incorporates requirements of Part 70 of Title 40 of the Code of Federal Regulations promulgated pursuant to the Federal Clean Air Act. The primary purpose of this permit is to consolidate and identify existing state and federal air requirements applicable to **General Chemical LLC** and to provide practical methods for determining compliance with these requirements. The following narrative is designed to accompany the draft permit and is presented in the same general order as the permit. It initially describes the facility receiving the permit, the applicable requirements and their significance, and the methods for determining compliance with those applicable requirements. This narrative is intended as an adjunct for the reviewer and to provide information only. It has no legal standing. Any revisions made to the permit in response to comments received during the public participation and EPA review process will be described in an addendum to this narrative.

I. Facility Description**A. Facility Identification**

1. Facility Name - General Chemical LLC – Augusta Plant
2. Parent/Holding Company Name - General Chemical LLC
3. Previous and/or Other Name(s)

Peridot Chemical Company
Tennessee Chemical Company
General Chemical Corporation

4. Facility Location

1580 Columbia Nitrogen Road
Augusta, Georgia 30903

5. Attainment, Non-attainment Area Location, or Contributing Area - The facility is located in an attainment area.
6. Class I Area Impacts - The facility is not located within 200 km of a Class I area.

B. Site Determination - There are no other facilities which could possibly be contiguous or adjacent and under common control.**C. Existing Permits**

Table 1 below lists all current Title V permits, all amendments, 502(b)(10) changes, and off-permit changes, issued to the facility, based on a comparative review of form A.6, Current Permits, of the Title V application and the "Permit" file(s) on the facility found in the Air Branch office.

Table 1: List of Current Permits, Amendments, and Off-Permit Changes

Permit Number and/or Off-Permit Change	Date of Issuance/ Effectiveness	Purpose of Issuance
2819-245-0008-V-01-0	January 1, 2001	Initial TV permit for operation of a 850 ton/day double absorption contact sulfuric acid plant and a 270 tons/day alum manufacturing facility
Off-permit change	June 13, 2002	Replacement of scrubber SC-1
Off-permit change	January 16, 2003	Addition of a 3 rd oleum storage tank
2819-245-0008-V-01-1	October 29, 2003	Minor modification without construction for the modification of Conditions 3.2.1 and 6.1.7.c.i to clarify the averaging period.
2819-245-0008-V-02-0*	February 24, 2004	Administrative amendment for name change to General Chemical LLC from General Chemical Corporation

* This permit revoked all previous permits and permit amendments. However, for the sake of being complete in this renewal review, the previous permits/amendments are also listed.

D. Process Description

1. SIC Codes(s) - 2819

The SIC Code(s) identified above were assigned by EPD's Air Protection Branch for purposes pursuant to the Georgia Air Quality Act and related administrative purposes only and are not intended to be used for any other purpose. Assignment of SIC Codes by EPD's Air Protection Branch for these purposes does not prohibit the facility from using these or different SIC Codes for other regulatory and non-regulatory purposes.

Should the reference(s) to SIC Code(s) in any narratives or narrative addendum previously issued for the Title V permit for this facility conflict with the revised language herein, the language herein shall control; provided, however, language in previously issued narratives that does not expressly reference SIC Code(s) shall not be affected.

2. Description of Product(s)

Sulfuric Acid and Aluminum Sulfate (Alum)

3. Overall Facility Process Description

General Chemical LLC – Augusta Plant operates a 850 tons/day double absorption contact sulfuric acid plant and a 270 tons/day alum manufacturing facility.

Sulfur is brought in by rail. To unload the rail car, the sulfur is heated to a molten state. It enters a sulfur burner where it is burned with air to form sulfur dioxide gas. The gas enters a four-pass converter containing vanadium pentoxide catalyst. The SO_2 reacts with excess O_2 in the gas to form SO_3 . Heat is removed after the 1st and 2nd passes to promote conversion to SO_3 . All of the SO_3 formed in the 1st, 2nd, and 3rd passes is removed in the oleum tower and interpass tower to promote conversion in the 4th pass. In the oleum tower, SO_3 is absorbed in fuming sulfuric acid. In the interpass tower, the remaining SO_3 is absorbed in the water to form H_2SO_4 . Gas leaving the 4th pass of the converter flows through the final tower where the SO_3 reacts with water to form H_2SO_4 . Gas leaving the final tower passes through a mist eliminator and is discharged through the stack.

Bauxite or aluminum trihydrate is fed into a digester with concentrated sulfuric acid and water. The insoluble material is removed by filtration and the resulting aluminum sulfate is crystallized out of the solution. The alum (aluminum sulfate) is sent to storage. There is no control equipment in this area.

4. Overall Process Flow Diagram

The facility provided a process flow diagram in their Title V permit application.

E. Regulatory Status

1. PSD/NSR

The facility was potentially a “major” source under PSD/NSR regulations, but may have taken limits to remain a “minor” source and avoid a PSD/NSR review. The facility accepted a limit of 0.08 lb acid mist per ton of acid produced (based on 850 ton/day maximum) to avoid PSD in 1996 when the plant capacity was more than doubled.

2. Title V Major Source Status by Pollutant

Table 2: 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	N/A			
TRS	N/A			
H ₂ S	N/A			
Individual HAP	Yes			✓
Total HAPs	Yes			✓

3. MACT Standards

No MACT standards appear to be applicable to this facility.

4. Program Applicability (AIRS Program Codes)

Program Code	Applicable (y/n)
Program Code 6 - PSD	No
Program Code 8 – Part 61 NESHAP	No
Program Code 9 - NSPS	Yes
Program Code M – Part 63 NESHAP	No
Program Code V – Title V	Yes

Regulatory Analysis

II. Facility Wide Requirements

A. Emission and Operating Caps

There are no facility-wide emission and operating caps.

B. Applicable Rules and Regulations

There are no applicable facility-wide rules and regulations.

C. Compliance Status

The facility did not indicate any facility-wide compliance issues in the Title V Renewal application.

D. Operational Flexibility

The facility did not request any operational flexibility in the Title V Renewal application.

E. Permit Conditions

There are no Permit Conditions in Section 2.0 of the Permit.

III. Regulated Equipment Requirements

A. Brief Process Description

A brief process description is specified in Section I.D.3 of this narrative.

B. Equipment List for the Process

3.1 Emission Units

Emission Units		Specific Limitations/Requirements		Air Pollution Control Devices	
ID No.	Description	Applicable Requirements/Standards	Corresponding Permit Conditions	ID No.	Description
K01	Sulfuric Acid Plant – 850 tons/day	391-3-1-.02(2)(a)1 391-3-1-.02(2)(b) 391-3-1-.02(2)(j) 40 CFR 60 Subpart H	3.2.1, 3.3.1, 3.3.2, 4.2.1, 5.2.1, 5.2.2, 6.1.7, 6.2.1, 6.2.3, 6.2.4	SC-1 V04	Scrubber, Mist Eliminators

* Generally applicable requirements contained in this permit may also apply to emission units listed above.

C. Equipment & Rule Applicability

The Sulfuric Acid Plant (Source Code: K01) has a maximum production rate of 310,250 tons per year of 100% sulfuric acid. The facility was completed reconstructed and more than doubled its capacity in 1997. The emissions from the plant are controlled by mist eliminators (Source Code: V04) and a packed bed scrubber (Source Code: SC-1).

The sulfuric acid plant is subject to the following rules and regulations:

- 40 CFR 60 Subpart H – “*Standards of Performance for Sulfuric Acid Plants*”

The sulfuric acid production facility was modified after August 17, 1971. The rule limits the facility to sulfur dioxide emissions to less than 4 pounds per ton of sulfuric acid produced and 0.15 pounds sulfuric acid mist (H₂SO₄) per ton of sulfuric acid produced. The rule also limits opacity from the process to 10% or less.

- Georgia Rule 391-3-1-.02(2)(j) – “*Sulfuric Acid Plants*”

This plant was extensively modified after January 1, 1972, which requires the facility to comply with 40 CFR 60 Subpart H. The facility is also required to operate a continuous sulfur dioxide monitor and recorder.

No other equipment is classified as a significant emission unit. The storage tanks and all alum process equipment are listed as insignificant activities.

Emission and Operating Caps

The facility has agreed to 850 tons per day limit as a 365-day rolling average for sulfuric acid and 270 tons on a dry basis per day for alum. After a thorough review of the facility’s files, neither of these limits appear to be PSD Avoidance limits; rather, they are based on the facility’s maximum production rates.

Equipment Removed from the Site

Permit No. 2819-245-0008-V-02-0 contains requirements for an auxiliary boiler (Source Code: B01) rated at 20 MMBtu/hour that was subject to Georgia Rules 391-3-1-.02(2)(b), 391-3-1-.02(2)(d), and 391-3-1-.02(2)(g). According to SSCP’s most recent inspection of the facility, this boiler was removed in mid-2003. There are no references to the boiler in the facility’s Title V Renewal application. Therefore, all permit conditions related to this boiler were removed.

D. Compliance Status

The facility did not indicate any compliance issues in the Title V Renewal application.

E. Operational Flexibility

The facility did not request any operational flexibility in the Title V Renewal application.

F. Permit Conditions

Equipment Emission Caps and Operating Limits

Permit Condition 3.2.1 limits the facility to 850 tons per day of 100% sulfuric acid, calculated as a daily average over a 365-day rolling basis. This requirement was included in Permit No. 2819-245-0008-V-02-0, condition 3.2.1. No change was requested by the facility for this condition.

Permit Condition 3.2.2 limits the facility to 270 tons per day on a dry basis of alum. This requirement was included in Permit No. 2819-245-0008-V-02-0, condition 3.2.2. No change was requested by the facility for this condition.

Equipment Federal Rule Standards

Permit Condition 3.3.1 subjects the facility to 40 CFR 60 Subpart A – “*General Provisions*” and 40 CFR 60 Subpart H – “*Standards of Performance for Sulfuric Acid Plants*” for the sulfuric acid plant. This requirement was partially included in Permit No. 2819-245-0008-V-02-0, condition 3.3.1. The requirements for 40 CFR 60 Subpart A are being included in this Permit for further clarification of the applicable requirements. No change was requested by the facility for this condition.

Permit Condition 3.3.2 outlines the 40 CFR 60 Subpart H limits and PSD Avoidance limit for the sulfuric acid plant. These requirements were included in Permit No. 2819-245-0008-V-02-0, condition 3.3.2. The condition was modified to include specific 40 CFR 60 Subpart H references and to include Georgia Rule 391-3-1-.02(2)(j). No change was requested by the facility for this condition.

Equipment SIP Rules Standards

None

Equipment Standards Not Covered by a Federal or SIP Rule and Not Instituted as an Emission Cap or Operating Limit

None

Conditions Removed from the Permit

Permit Conditions 3.4.1, 3.4.2, and 3.4.3 of Permit No. 2819-245-0008-V-02-0 were removed. As discussed above, the applicable boiler was removed and these requirements are moot.

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

A. General Testing Requirements

The permit includes a requirement that the Permittee conduct performance testing on any specified emission unit when directed by the Division. Additionally, a written notification of any performance test(s) is required 30 days prior to the date of the test(s) and a test plan is required to be submitted with the test notification. Test methods and procedures for determining compliance with applicable emission limitations are listed and test results are required to be submitted to the Division within 60 days of completion of the testing.

B. Specific Testing Requirements

1. Individual Equipment

Permit Condition 4.2.1 of Permit No. 2819-245-0008-V-02-0 requires the facility to conduct annual performance tests for sulfur dioxide and sulfuric acid mist emissions from the sulfuric acid plant. According to the narrative for Permit No. 2819-245-0008-V-01-0, this is a 40 CFR 60 Subpart H requirement, but a testing frequency is not explicitly defined in the rule. The testing appears as a requirement as far back as Permit No. 2819-121-8414 issued September 29, 1992. EPD has the authority to require annual performance tests. The following table shows the results of the past 5 years annual testing for the sulfuric acid plant.

Percent Allowable for Sulfuric Acid Plant

	Limit (lb/ton acid)	2/17/05	2/18/04	2/20/03	3/14/02	3/14/01
Sulfur Dioxide	4	89%	80%	94%	77%	91%
Sulfuric Acid Mist	0.08	59%	52.5%	39%	52%	62%

Permit Condition 4.2.1 requires the facility conduct annual performance tests for sulfur dioxide and sulfuric acid mist emissions from the sulfuric acid plant. This requirement was included in Permit No. 2819-245-0008-V-02-0, condition 4.2.1. No change was requested by the facility for this condition.

2. Equipment Groups (all subject to the same test requirements)

None applicable.

V. Monitoring Requirements

A. General Monitoring Requirements

Condition 5.1.1 requires that all continuous monitoring systems required by the Division be operated continuously except during monitoring system breakdowns and repairs. Monitoring system response during quality assurance activities is required to be measured and recorded. Maintenance or repair is required to be conducted in an expeditious manner.

B. Specific Monitoring Requirements

1. Individual Equipment:

40 CFR 60 Subpart H requires the facility to operate a continuous emissions monitor (CEM) for sulfur dioxide per 40 CFR 60.84(a). The sulfuric acid plant utilizes an oxygen quench process, which is not compatible with the conversion factor requirements of 40 CFR 60.84(b). Likewise, the facility does not use the alternative requirements outlined in 40 CFR 60.84(d). Instead, the facility also operates a CEM for oxygen and utilizes an alternative monitoring method approved by EPD in a narrative dated February 6, 1996 for Permit No. 2819-121-11750, issued March 1, 1996. According to the 1996 narrative, EPD determined that this method of calculating sulfur dioxide emissions is more conservative than 40 CFR 60.84(d). Using the data from these two CEMs, the facility then uses the equation below to calculate sulfur dioxide emissions in pounds per ton of acid produced.

$$\text{lb SO}_2 \text{ per ton of acid produced} = \frac{1959a_2}{\frac{1-a_2-b_2}{0.79} - 1}$$

where:

a_2 = SO₂ concentration, volume fraction

b_2 = O₂ concentration, volume fraction

The sulfuric acid plant is also subject to standards for sulfuric acid mist and opacity. The Permittee is required to conduct a visible emissions check of the outlet stack. The mist eliminator should remove most of the entrained acid mist and assure compliance with the sulfuric acid mist emissions limit. Additionally, the opacity standard should also be met because any visible emissions from this process would most likely be sulfuric acid mist emissions. If visible emissions are in compliance with the opacity standard, then the Division should be reasonably assured that the sulfuric acid mist would be less than the PSD Avoidance standard.

Permit Condition 5.2.1 requires the facility to operate CEMs for sulfur dioxide and oxygen. This requirement was included in Permit No. 2819-245-0008-V-02-0, condition 5.2.1. No change was requested by the facility for this condition.

Permit Condition 5.2.2 requires the facility to conduct a visible emissions check from the stack for the sulfuric acid plant. The Permittee must keep a log and note the excursion and any actions taken to correct the problem. This requirement was included in Permit No. 2819-245-0008-V-02-0, condition 5.2.2. No change was requested by the facility for this condition.

2. Equipment Groups (all subject to the same monitoring requirements):

None applicable.

C. Compliance Assurance Monitoring (CAM)

Not Applicable

VI. Record Keeping and Reporting Requirements

A. General Record Keeping and Reporting Requirements

The Permit contains general requirements for the maintenance of all records for a period of five years following the date of entry and requires the prompt reporting of all information related to deviations from the applicable requirements. Records, including identification of any excess emissions, exceedances, or excursions from the applicable monitoring triggers, the cause of such occurrence, and the corrective action taken, are required to be kept by the Permittee and reporting is required on a semiannual basis.

B. Specific Record Keeping and Reporting Requirements

Permit Condition 6.1.7.a.i specifies an excess emission per 40 CFR 60.84(e) as any three-hour period of emission of sulfur dioxide greater than 4 pounds per ton of 100% sulfuric acid produced. This requirement was included in Permit No. 2819-245-0008-V-02-0, condition 6.1.7.a.i. No change was requested by the facility for this condition.

Permit Condition 6.1.7.c.i requires the facility to report any day that the 365-day rolling average production level of sulfuric acid is greater than 850 tons per day. This requirement was included in Permit No. 2819-245-0008-V-02-0, condition 6.1.7.c.i. No change was requested by the facility for this condition.

Permit Condition 6.1.7.c.ii requires the facility to report any day that the production level is of alum greater than 270 tons per day. This requirement was included in Permit No. 2819-245-0008-V-02-0, condition 6.1.7.c.ii. No change was requested by the facility for this condition.

Permit Condition 6.1.7.c.iii requires the facility to report any instances of visible emissions from the sulfuric acid plant during the daily visible emissions check. This requirement was included in Permit No. 2819-245-0008-V-02-0, condition 6.1.7.c.iii. No change was requested by the facility for this condition.

Permit Condition 6.2.1 requires the facility to maintain daily production records at the sulfuric acid plant. These daily records shall be used to determine the 365-day rolling average production rate. This requirement was partially included in Permit No. 2819-245-0008-V-02-0, condition 6.2.1. EPD added the requirement to use these daily production records to determine the 365-day rolling average production rate. No change was requested by the facility for this condition.

Permit Condition 6.2.2 requires the facility to maintain daily production records at the alum plant. This requirement was included in Permit No. 2819-245-0008-V-02-0, condition 6.2.2. No change was requested by the facility for this condition.

Permit Condition 6.2.3 provides the equation the facility must use to show compliance with the sulfur dioxide standard for 40 CFR 60 Subpart H. This requirement was included in Permit No. 2819-245-0008-V-02-0, condition 6.2.4. No change was requested by the facility for this condition.

Permit Condition 6.2.4 requires the facility to calculate the sulfur dioxide emission rate for each three-hour period. This requirement was included in Permit No. 2819-245-0008-V-02-0, condition 6.2.5. No change was requested by the facility for this condition.

Conditions Removed from the Permit

Permit Conditions 6.1.7.b.i and 6.2.3 from Permit No. 2819-245-0008-V-02-0 were removed since the boiler is no longer in service at the facility.

VII. Specific Requirements

- A. Operational Flexibility – Not Applicable
- B. Alternative Requirements – Not Applicable
- C. Insignificant Activities – See Attachment B to the Permit for a list of Insignificant Activities.
- D. Temporary Sources – Not Applicable
- E. Short-Term Activities – Not Applicable
- F. Compliance Schedule/Progress Reports – Not Applicable
- G. Emissions Trading – Not Applicable
- H. Acid Rain Requirements – Not Applicable
- I. Stratospheric Ozone Protection Requirements

The facility indicated in the Title V Renewal application that there are air conditioners or refrigeration equipment that uses CFC's, HFC's, or other stratospheric ozone-depleting substances listed in 40 CFR Part 82, Subpart A, Appendices A.

J. Pollution Prevention – Not Applicable

K. Specific Conditions – Not Applicable

VIII. General Provisions

Generic provisions have been included in this permit to address the requirements in 40 CFR Part 70 that apply to all Title V sources, and the requirements in Chapter 391-3-1 of the Georgia Rules for Air Quality Control that apply to all stationary sources of air pollution.

Addendum to Narrative

EPD issued draft Title V Permit 2819-245-0008-V-03-0 to General Chemical LLC – Augusta Plant in Augusta, Georgia on March 27, 2006. The public notice for this permit was published in the *Augusta Chronicle* on April 21, 2006. The public comment period expired May 22, 2006. Comments were received from General Chemical on April 17, 2006. No comments were received from the EPA or public. The comments are summarized below followed by a discussion of each comment and any changes made to the permit as a result.

Comments received from General Chemical dated April 13, 2006

1. In Part 1.0 Facility Description, 1.3 Overall Facility Process Description, Sentence 7 – the word “oelum” is misspelled, the correct spelling is “oleum.”

RESPONSE: The change was made as requested.

2. In Attachment B, Insignificant Activities Checklist, Category Combustion Equipment, Item #1 is currently “blank” and we would like to change this to “1” as we occasionally conduct fire extinguisher training that involves the use of small fires.

RESPONSE: The change was made as requested.

3. In Attachment B, Insignificant Activities Checklist, Category Maintenance, Cleaning, and Housekeeping, Item #4 is currently “blank” and we would like to change this to “1” as we occasionally use a parts cleaner.

RESPONSE: The change was made as requested.

4. In Attachment B, Insignificant Activities Checklist, Category Maintenance, Cleaning, and Housekeeping, Item #5 currently says “10” and we would like to change this to “30.”

RESPONSE: The change was made as requested.

5. In Attachment B, Insignificant Activities Checklist, Category Laboratories and Testing, Item #1 currently says “1” and we would like to change this to “2” as we have 2 units.

RESPONSE: The change was made as requested.

6. In Attachment B, Insignificant Activities Checklist, Category Laboratories and Testing, Item #2 currently says “1” and we would like to change this to “3” as we have 3 areas where we do quality control testing.

RESPONSE: The change was made as requested.

7. In Attachment B, Insignificant Activities Checklist, Category Pollution Control, Item #4 is currently “blank” and we would like to change this to “1” as there is an unused surface impoundment onsite.

RESPONSE: The change was made as requested.

8. In Attachment B, Insignificant Activities Checklist, Category Generic Emission Groups, all sections are currently “blank” and we would like to change the section that states “Fuel burning equipment with a rated heat input capacity of less than 5 million BTU/hour, burning only distillate fuel oil, natural gas, and/or LGP” to “1.” General Chemical would like to inform that this change is due to a discovery we made during our review of the draft permit. We discovered that we might not have fully described an emission source listed in the permit application. The emission unit is “Emission Unit K01, described as the Sulfuric Acid Plant – 850 tons/day.” Specifically, the permit application does not state that a natural gas fired “Startup burner” is used for 2 to 3 days in the event of a long duration shutdown (i.e., plant turnaround) to startup the sulfur burner. This burner has a heating value of 2.3 million BTU/hour. The plant flow diagram and permit application documents show/state only the sulfur charge when in reality we occasionally use this natural gas fired burner. It appears that this burner should qualify to be listed as an Insignificant Activity since the maximum heat input rate is less than 5 million BTU/hour.

RESPONSE: The change was made as requested.