

FILED

UNITED STATES DISTRICT COURT  
FOR THE NORTHERN DISTRICT OF INDIANA  
HAMMOND DIVISION

2007 APR 26 AM 11:20

STEPHEN R. LUDWIG, CLERK  
U.S. DISTRICT COURT  
FOR THE NORTHERN DISTRICT  
OF INDIANA

UNITED STATES OF AMERICA, )  
 )  
Plaintiff, )  
 )  
v. )  
 )  
RHODIA INC., )  
 )  
Defendant. )

CIVIL ACTION NO: 2:07CV134WL

NOTICE OF LODGING OF CONSENT DECREE

Plaintiff, the United States of America, notifies the Court and the parties that at the same time it is filing its Complaint in this action, it is lodging a consent decree that would resolve the violations alleged in the Complaint. A copy of the Consent Decree executed by all of the parties is attached as Exhibit 1 to this Notice of Lodging.

Pursuant to Department of Justice regulation, 28 C.F.R. § 50.7, the proposed consent decree must be subject to public comment before it is entered by the Court. Accordingly, the Court should refrain from entering the proposed consent decree at this time.

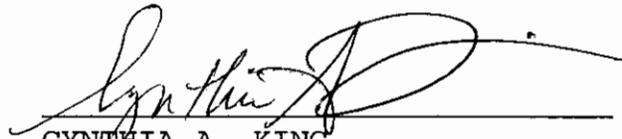
The United States will publish notice of the proposed consent decree in the Federal Register and solicit public comment for a period of thirty days. After receiving public

comments, the United States will consider whether the comments disclose facts or considerations which indicate that the proposed consent decree is inappropriate, improper, or inadequate. If so, the United States will withdraw its consent to the proposed consent decree; if not, the United States will move the Court for entry of the proposed partial consent decree.

The United States will notify the Court and the parties when the comment period expires.

Respectfully submitted,

MATTHEW J. MCKEOWN  
Acting Assistant Attorney  
General  
Environment and Natural  
Resources Division  
U.S. Department of Justice

A handwritten signature in black ink, appearing to read 'Cynthia A. King', is written over a horizontal line.

CYNTHIA A. KING  
Special Trial Attorney  
U.S. Environmental Protection  
Agency  
77 West Jackson Blvd.  
Chicago, IL 60604  
(312) 886-6831

JOSEPH S. VAN BOKKELEN  
United States Attorney  
Northern District of Indiana

*Wayne T. Ault*

---

WAYNE T. AULT  
Assistant United States Attorney  
Northern District of Indiana  
5400 Federal Plaza, Suite 1500  
Hammond, Indiana 46320

**CERTIFICATE OF SERVICE**

I, Cynthia A. King, do hereby certify that a copy of the Notice of Lodging of Consent Decree was sent by first class mail, to the following persons:

David Schnare  
U.S. Environmental Protection Agency Headquarters  
Ariel Rios Building  
1200 Pennsylvania Avenue, N.W.  
Mailcode 2242A  
Washington D.C. 20460

Jan Gerro  
U.S. Environmental Protection Agency  
Region 6  
1445 Ross Avenue  
Suite 1200  
Mailcode 6RCEA  
Dallas, TX 75202

Thomas P. Mintz  
U.S. Environmental Protection Agency  
Region 9  
75 Hawthorne Street  
Mailcode ORC-2  
San Francisco, CA 94105

Steven D. Griffin  
Indiana Attorney General's Office  
302 West Washington Street, Fifth Floor  
Indianapolis, IN 46204

Thomas Nyhan  
Hammond Department of Environmental Management  
Hammond City Hall, Room 304  
5925 Calumet Avenue  
Hammond, IN 46320

Alexander Crockett  
Brian C. Bungler  
Bay Area Air Quality Management District  
Office of District Counsel  
939 Ellis Street  
San Francisco, CA 94109

Peggy M. Hatch  
Administrator, Enforcement Division  
Office of Environmental Compliance  
Louisiana Department of Environmental Quality  
P.O. Box 4312  
Baton Rouge, Louisiana 70821-4312

James J. Dragna, Esq.  
Bingham McCutchen LLP  
Suite 4400  
355 South Grand Avenue

Paul Linskey  
Rhodia Inc.  
CN 7500  
Cranbury, NJ 08512-7500

on the 26<sup>th</sup> day of April, 2007.

  
CYNTHIA A. KING

10/20/00  
10/20/00

# EXHIBIT 1

IN THE UNITED STATES DISTRICT COURT  
FOR THE NORTHERN DISTRICT OF INDIANA, HAMMOND DIVISION

UNITED STATES OF AMERICA,

Plaintiff,

THE STATE OF INDIANA, THE  
CITY OF HAMMOND, THE STATE OF  
LOUISIANA, through THE DEPARTMENT  
OF ENVIRONMENTAL QUALITY, and  
THE PEOPLE OF THE STATE OF  
CALIFORNIA, by and through the,  
BAY AREA AIR QUALITY MANAGEMENT  
DISTRICT,

Plaintiff-Intervenors,

v.

RHODIA INC.

Defendant.

Civil Action No. \_\_\_\_\_

CONSENT DECREE

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WHEREAS, Plaintiff United States of America, on behalf of the United States Environmental Protection Agency (EPA), has filed a complaint concurrently with the lodging of this Consent Decree, alleging that Defendant Rhodia Inc. (Rhodia or Defendant), at one or all of its sulfuric acid plants in Baytown and Houston, Texas; Baton Rouge, Louisiana; Dominguez and Martinez, California; and Hammond, Indiana; has violated:

(1) Prevention of Significant Deterioration Requirements found at Part C of Subchapter I of the Clean Air Act (the Act), 42 U.S.C. § 7475, and the regulations promulgated thereunder at 40 C.F.R. Section 52.21; and "Plan Requirements for Non-Attainment Areas" at Part D of Subchapter I of the Act, 42 U.S.C. §§ 7502-7503, and the regulations promulgated thereunder at 40 C.F.R. § 51.165, 40 C.F.R. Part 51 Appendix S, and 40 C.F.R. § 52.24 (collectively, PSD/NSR Requirements);

(2) New Source Performance Standards (NSPS) found at 40 C.F.R. Part 60, Subparts A and H, promulgated under Section 111 of the Act, 42 U.S.C. § 7411, for sulfuric acid plants (collectively, NSPS Requirements);

(3) Title V operating permit requirements found at Sections 501 to 507 of the Act, 42 U.S.C. §§ 7661-7661f, and regulations promulgated thereunder at 40 C.F.R. Parts 70 and 71

(collectively, Title V Requirements); and

(4) the federally-enforceable State Implementation Plans (SIPs) and other state rules developed by the states of California, Indiana, Louisiana and Texas, which incorporate or implement the above requirements and which establish federally enforceable permitting programs for construction and operation of new and modified sources (collectively, SIP Requirements);

WHEREAS, the State of Indiana, the State of Louisiana, and the Bay Area Air Quality Management District in California have alleged violations of their respective applicable SIP provisions and other state and local rules, regulations, and permits incorporating and/or implementing the foregoing federal requirements;

WHEREAS, the Complaint against Rhodia alleges that Rhodia constructed, reconstructed or modified its sulfuric acid plants without obtaining the proper permits; installing the required control technology; or complying with emission limits, monitoring, record-keeping and reporting requirements of the Act;

WHEREAS, Rhodia has agreed to install controls that will achieve Best Available Control Technology (BACT) equivalent emission levels at its sulfuric acid plants and to implement

best work practices at its sulfuric acid plants;

WHEREAS, Rhodia does not admit any liability to the United States or any of the States arising out of the acts or omissions alleged in the Complaint and this Consent Decree resolves all allegations stated in the United States' and State Parties' Complaints;

WHEREAS, the Parties recognize, and the Court by entering this Consent Decree finds, that this Consent Decree has been negotiated by the Parties in good faith, will avoid litigation among the Parties and that this Consent Decree is fair, reasonable, and in the public interest;

NOW, THEREFORE, before the taking of any testimony, without the adjudication or admission of any issue of fact or law except as provided in Section I, below, and with the consent of the Parties, IT IS HEREBY ADJUDGED, ORDERED, AND DECREED as follows:

I. JURISDICTION AND VENUE

1. This Court has jurisdiction over the subject matter of this action, pursuant to 28 U.S.C. §§ 1331, 1345, and 1355, and Section 113(b) of the Act, 42 U.S.C. § 7413(b), and over the Parties. Venue lies in this District pursuant to the Act Section 113(b), 42 U.S.C. § 7413(b), and 28 U.S.C. §§ 1391(b)

and (c) and 1395(a), because some of the violations alleged in the Complaint are alleged to have occurred in, and Defendant conducts business in, this judicial district. For purposes of this Decree, or any action to enforce this Decree, Defendant consents to the Court's jurisdiction over this Decree or such action and over Defendant and consents to venue in this judicial district.

2. For purposes of this Consent Decree, Defendant agrees that the Complaint and the State Parties' Complaints in Intervention state claims upon which relief may be granted pursuant to Sections 111, 165, 173, and 502 of the Act, 42 U.S.C. §§ 7411, 7475, 7503, 7661a.

3. Notice of the commencement of this action has been given to the States of Indiana, Louisiana, and Texas; the Bay Area Air Quality Management District; and the South Coast Air Quality Management District, as required by Section 113 of the Act, 42 U.S.C. § 7413.

## II. APPLICABILITY

4. The obligations of this Consent Decree apply to and are binding upon the United States and the State Parties, and upon Defendant and its officers, employees, agents, subsidiaries, successors, assigns, or other entities or persons

otherwise bound by law.

5. No transfer of ownership or operation of any of the Facilities, whether in compliance with the procedures of this Paragraph or otherwise, shall relieve Defendant of its obligation to ensure that the terms of the Decree are implemented. At least 30 days prior to such transfer, Defendant shall provide a copy of this Consent Decree to the proposed transferee and shall simultaneously provide written notice of the prospective transfer to the EPA Region and the relevant State Party, the United States Attorney for the Northern District of Indiana, Hammond Division, and the United States Department of Justice, in accordance with Section XIV of this Decree (Notices). Any attempt to transfer ownership or operation of a sulfuric acid plant without complying with this Paragraph constitutes a violation of this Decree.

6. In any action to enforce this Consent Decree, Defendant shall not raise as a defense the failure by any of its officers, directors, employees, agents, or contractors to take any actions necessary to comply with the provisions of this Consent Decree provided, however, that nothing in this Paragraph limits the operation of the Force Majeure provision (Section IX).

### III. DEFINITIONS

7. Terms used in this Consent Decree that are defined in the Act or in federal and state regulations promulgated pursuant to the Act shall have the meanings assigned to them in the Act or such regulations, unless otherwise provided in this Decree. Whenever the terms set forth below are used in this Consent Decree, the following definitions shall apply:

- a. "Acid mist" shall mean the pollutant sulfuric acid mist;
- b. "BACT" shall mean Best Available Control Technology, as defined at 40 C.F.R. § 52.21(b)(12);
- c. "Baytown" shall mean Rhodia's sulfuric acid plant located at 3439 Park Street, Baytown, Texas 77520;
- d. "Baton Rouge #1 and #2" shall mean Rhodia's two sulfuric acid plants located at 1275 Airline Highway, Baton Rouge, Louisiana 70805;
- e. "CEMS" or "Continuous Emission Monitoring System" shall mean equipment that continuously measures and records the concentration and/or emission rate of a pollutant, in the units specified by the emission limit concerned;
- f. "Complaint" shall mean the complaint filed by the United States, and the Complaints in Intervention filed by the

State Parties;

g. "Consent Decree" or "Decree" shall mean this Decree and all appendices attached hereto (listed in Section XXIII), but in the event of any conflict between the text of this Decree and any Appendix, the text of this Decree shall control;

h. "Day" shall mean a calendar day. In computing any period of time under this Consent Decree, where the last day would fall on a Saturday, Sunday, or federal or State holiday, the period shall run until the close of business of the next business day;

i. "Defendant" shall mean Rhodia Inc.;

j. "Dominguez" shall mean Rhodia's sulfuric acid plant located at 20720 S. Wilmington Avenue, Carson, California 90810;

k. "Effective Date" with respect to any emission limit required by this Consent Decree shall mean the date beginning upon which Defendant is required to comply with such emission limit. With respect to the Consent Decree as a whole, "effective date" shall have the meaning given in Paragraph 74;

l. "EPA" shall mean the United States Environmental Protection Agency and any of its successor departments or

agencies;

m. "Facilities" shall mean Rhodia's Baytown, Baton Rouge #1 and #2, Dominguez, Hammond, Houston #2 and #8, and Martinez sulfuric acid plants;

n. "Hammond" shall mean Rhodia's sulfuric acid plant located at 2000 Michigan Street, Hammond, Indiana 46320;

o. "Houston #2 and #8" shall mean Rhodia's two sulfuric acid plants located at 8615 Manchester Street, Houston, Texas 77012;

p. "Long-Term Limit" shall mean a sulfur dioxide (SO<sub>2</sub>) emission limit for a sulfuric acid plant expressed as pounds per ton of 100% sulfuric acid produced ("lbs/ton"), averaged over all Operating Hours in a rolling 365-day period;

q. "Malfunction" shall mean, consistent with 40 C.F.R. § 60.2, any sudden, infrequent, and not reasonably preventable failure of air pollution control equipment, process equipment, or a process to operate in a normal or usual manner, but shall not include failures that are caused in part by poor maintenance or careless operation;

r. "Martinez" shall mean Rhodia's sulfuric acid plant located at 100 Mococo Road, Martinez, California 94553;

s. "100% sulfuric acid produced" shall mean the

stoichiometric quantity of sulfuric acid that would be produced at a sulfuric acid plant if all sulfur trioxide (SO<sub>3</sub>) exiting the converter were used to produce anhydrous sulfuric acid. For purposes of this definition, scrubber byproduct shall be considered to be included in "100% sulfuric acid produced";

t. "Operating Hours" shall mean periods during which sulfur or sulfur-bearing compounds, excluding conventional fossil fuels such as natural gas or fuel oils, are being fed to the furnace.

u. "Paragraph" shall mean a portion of this Decree identified by an Arabic numeral;

v. "Parties" shall mean the United States; the Bay Area Air Quality Management District; the States of Indiana and Louisiana; and Defendant;

w. "Section" shall mean a portion of this Decree identified by a roman numeral;

x. "Short-Term Limit" shall mean the SO<sub>2</sub> emission limit for each sulfuric acid plant expressed as pounds per ton of 100% sulfuric acid produced ("lbs/ton"), averaged over each rolling 3-hour period. Except for periods of Startup, Shutdown and Malfunction, the Short-Term Limits established under this Consent Decree shall apply at all times.

y. "Shutdown" shall mean the cessation of operation of a sulfuric acid plant for any reason. Shutdown begins at the time sulfur or sulfur-bearing feeds, excluding conventional fossil fuels such as natural gas or fuel oils, to the furnace ceases;

z. "SO<sub>2</sub>" shall mean the pollutant sulfur dioxide;

aa. "Startup" shall mean the 24-hour period at any sulfuric acid plant beginning when the feed of sulfur or sulfur-bearing materials, excluding conventional fossil fuels such as natural gas or fuel oils, to the furnace commences after a main gas blower shutdown;

bb. "State Parties" shall mean Indiana, Louisiana, and the Bay Area Air Quality Management District in California;

cc. "States" shall mean California, Indiana, Louisiana, and Texas;

dd. "Sulfuric acid plant" shall mean a process unit engaged in the production of sulfuric acid and related products using the contact process;

ee. "Ton" or "tons" shall mean short ton or tons;

ff. "United States" shall mean the United States of America, acting on behalf of EPA.

IV. CIVIL PENALTY

8. Defendant shall pay \$2,000,000 (two million dollars) as a civil penalty, together with interest accruing from the date on which the Consent Decree is entered with the Court, at the rate specified in 28 U.S.C. § 1961. Within 30 days after the effective date of this Consent Decree, payment of 50% of the civil penalty (\$1,000,000) shall be paid to the United States by FedWire Electronic Funds Transfer (EFT) to the U.S. Department of Justice in accordance with instructions to be provided to Defendant, following lodging of the Consent Decree, by the Financial Litigation Unit of the U.S. Attorney's Office for the Northern District of Indiana, Hammond Division. At the time of payment, Defendant shall simultaneously send written notice of payment and a copy of any transmittal documentation (which should reference DOJ case number 90-5-2-1-08500 and the civil action number of this case) to the United States in accordance with Section XIV of this Decree (Notices).

9. No amount of the civil penalty to be paid by Defendant shall be used to reduce its federal or State tax obligations.

10. Within 30 days after the effective date of this Consent Decree, Defendant shall pay the balance of the civil penalty (\$1,000,000) to the State Parties as follows:

a. \$333,333.50 to the State of Louisiana. Payment of the civil penalties and of any stipulated penalties owed to the State of Louisiana shall be made by certified check made payable to the Louisiana Department of Environmental Quality and sent to Darryl Serio, Fiscal Director, Office of Management and Finance, LDEQ, P.O. Box 4303, Baton Rouge, Louisiana 70821-4303;

b. \$66,666.50 to the State of Indiana. Civil and stipulated penalties owed to the State of Indiana are payable by check to the Environmental Management Special Fund. Checks shall include the Case Number 2006-15770-A and shall be mailed to Cashier - Mail Code 50-10C, Indiana Department of Environmental Management, 100 N. Senate Avenue, Indianapolis, IN 46204-2251. Any future civil and stipulated penalties owed by Rhodia to the State of Indiana shall be paid twenty percent (20%) to the State of Indiana and eighty percent (80%) to the City of Hammond;

c. \$266,666.50 to the City of Hammond. Civil and stipulated penalties owed to the City of Hammond are payable by check to the Hammond City Controller. Checks shall include the Case Number of this Action and shall be mailed to Hammond Department of Environmental Management, 5925 Calumet Avenue, Room 304, Hammond, IN 46320. Any future civil and stipulated

penalties owed by Rhodia to the State of Indiana shall be paid twenty percent (20%) to the State of Indiana and eighty percent (80%) to the City of Hammond; and

d. \$333,333.50 to the Bay Area Air Quality Management District. Payment of the civil penalties and of any stipulated penalties owed to the Bay Area Air Quality Management District shall be made by check made payable to the Bay Area Air Quality Management District and sent to Bay Area Air Quality Management District, Office of District Counsel, Brian C. Bunger, Esq., District Counsel, 939 Ellis Street, San Francisco, California 94109.

V. COMPLIANCE REQUIREMENTS

11. Emission Limits

a. Hammond: By the Effective Date specified in Paragraph 11.i., below, the Hammond sulfuric acid plant shall meet the following SO<sub>2</sub> emission limits:

i. A Long-Term Limit of 2.50 lbs/ton.

Defendant shall commence monitoring as of the Effective Date. Defendant shall have until 365 days after the Effective Date to demonstrate compliance with this Long-Term Limit;

ii. A Short-Term Limit of 3.50 lbs/ton;

b. Martinez: By the Effective Date specified in

Paragraph 11.i., below, the Martinez sulfuric acid plant shall meet the following SO<sub>2</sub> emission limits:

- i. A Long-Term Limit of 2.20 lbs/ton.

Defendant shall commence monitoring as of the Effective Date. Defendant shall have until 365 days from the Effective Date to demonstrate compliance with this Long-Term Limit;

- ii. A Short-Term Limit of 3.00 lbs/ton.

c. Dominguez: By the Effective Date specified in Paragraph 11.i., below, the Dominguez sulfuric acid plant shall meet the following SO<sub>2</sub> emission limits:

- i. Comply with the applicable annual SO<sub>2</sub> allocation as determined by the South Coast Air Quality Management District's Regional Clean Air Incentives Market (RECLAIM), as defined in Regulation XX of the South Coast Air Quality Management District Rules;

- ii. A Short-Term Limit of 3.50 lbs/ton.

d. Houston #8: By the Effective Date specified in Paragraph 11.i., below, the Houston #8 sulfuric acid plant shall meet the following SO<sub>2</sub> emission limits:

- i. A Long-Term Limit of 1.70 lbs/ton.

Defendant shall commence monitoring as of the Effective Date. Defendant shall have until 365 days from the Effective Date to

demonstrate compliance with this Long-Term Limit;

ii. A Short-Term Limit of 3.00 lbs/ton.

e. Baytown Facility: By the Effective Date specified in Paragraph 11.i., the Baytown sulfuric acid plant shall meet the following SO<sub>2</sub> emission limits:

i. A Long-Term Limit of 2.20 lbs/ton.

Defendant shall commence monitoring as of the Effective Date.

Defendant shall have until 365 days from the Effective Date to demonstrate compliance with this Long-Term Limit;

ii. A Short-Term Limit of 3.00 lbs/ton.

f. Baton Rouge #2: By the Effective Date specified in Paragraph 11.i., the Baton Rouge #2 sulfuric acid plant shall meet the following SO<sub>2</sub> emission limits:

i. A Long-Term Limit of 2.20 lbs/ton.

Defendant shall commence monitoring as of the Effective Date.

Defendant shall have until 365 days from the Effective Date to demonstrate compliance with this Long-Term Limit;

ii. A Short-Term Limit of 3.00 lbs/ton.

g. Baton Rouge #1: Beginning on the Effective Date specified in Paragraph 11.i., the Baton Rouge #1 sulfuric acid plant shall meet the following SO<sub>2</sub> emission limits:

i. A Long-Term Limit of 1.90 lbs/ton.

Defendant shall commence monitoring as of the Effective Date.

Defendant shall have until 365 days from the Effective Date to demonstrate compliance with this Long-Term Limit;

ii. A Short-Term Limit of 3.00 lbs/ton.

h. Houston #2: Beginning on the Effective Date specified in Paragraph 11.i., the Houston #2 sulfuric acid plant shall meet the following SO<sub>2</sub> emission limits:

i. A Long-Term Limit of 1.80 lbs/ton.

Defendant shall commence monitoring as of the Effective Date.

Defendant shall have until 365 days from the Effective Date to demonstrate compliance with this Long-Term Limit;

ii. A Short-Term Limit of 3.00 lbs/ton.

i. Effective Dates for Emission Limits: The Effective Dates for each emission limit specified in Paragraph 11.a. through 11.h., are as follows:

i. Hammond: July 1, 2007

ii. Martinez: July 1, 2007

iii. Dominguez: July 1, 2007

iv. Baytown: January 1, 2009

v. Houston #8: July 1, 2009

vi. Baton Rouge #2: January 1, 2011

vii. Baton Rouge #1: May 1, 2012

viii. Houston #2: April 1, 2014.

j. NSPS Applicability: Not later than the Effective Date for achieving the applicable SO<sub>2</sub> emission limits specified in Paragraphs 11.a. through 11.i., each sulfuric acid plant shall be considered an affected facility for purposes of the New Source Performance Standard (NSPS) 40 C.F.R. Part 60, Subpart H. Not later than the applicable Effective Date, each sulfuric acid plant covered by this Consent Decree shall comply with all applicable requirements for affected facilities under the NSPS 40 C.F.R. Part 60, Subparts A and H, or the Consent Decree if more stringent. Notices and other obligations set forth in this Consent Decree shall be deemed to satisfy all applicable initial notification and compliance demonstration requirements of NSPS Subparts A and H.

k. Acid Mist Limits: Not later than the effective date of this Consent Decree, each of the sulfuric acid plants shall comply with the NSPS, Subpart H sulfuric acid mist emission limitation of 0.15 lbs/ton of 100% sulfuric acid produced, as set forth at 40 C.F.R. § 60.83(a)(1). Compliance with this limit is to be demonstrated using the performance test required by paragraph 14 of this Consent Decree.

l. Best Practices: Consistent with 40 C.F.R.

§ 60.11(d), at all times, including periods of Startup, Shutdown, and Malfunction, Defendant shall, to the extent practicable, maintain and operate each of its sulfuric acid plants, including associated air pollution control equipment, in a manner consistent with good air pollution control practice for minimizing emissions.

m. Scrubber Design: All new scrubbers installed pursuant to this Consent Decree and used for SO<sub>2</sub> control at any of the sulfuric acid plants shall be designed to achieve at least 95% removal efficiency, except during periods of Startup, Shutdown and Malfunction.

12. Interim Emission Limits: Upon the effective date of this Consent Decree and until the Effective Date of the SO<sub>2</sub> emission limits specified in Paragraph 11.d., 11.f., 11.g., 11.h., for the Houston # 8, Baton Rouge #2, Baton Rouge #1, and Houston #2 sulfuric acid plants, Defendant shall comply with an interim SO<sub>2</sub> emission limit at each of these sulfuric acid plants. The interim SO<sub>2</sub> emission limit for each of these sulfuric acid plants shall be the permit limit in place at the time of the effective date of this Consent Decree or the currently applicable State Implementation Plan emission limit for SO<sub>2</sub>, whichever is more stringent.

13. Continuous Emissions Monitoring System:

a. At each of its sulfuric acid plants, no later than the Effective Date of each SO<sub>2</sub> emission limit established under Paragraph 11.a. through 11.i., Defendant shall install and make operational a SO<sub>2</sub> continuous emissions monitoring system (CEMS). Except during CEMS breakdowns, repairs, calibration checks, and zero span adjustments, the CEMS shall be operated during all sulfuric acid plant Operating Hours, and shall be used at each sulfuric acid plant to demonstrate compliance with the SO<sub>2</sub> emission limits established in Paragraph 11 of this Consent Decree. The SO<sub>2</sub> CEMS shall meet the following requirements:

i. The SO<sub>2</sub> CEMS shall monitor and record the 3-hour arithmetic average (not weighted by production volume) SO<sub>2</sub> emission rate from each sulfuric acid plant in units of lbs per ton of 100% acid produced;

ii. Except for the Dominguez facility, the SO<sub>2</sub> CEMS shall monitor and record the SO<sub>2</sub> emission rate from each sulfuric acid plant averaged (arithmetic average, not weighted by production volume) over all Operating Hours in each rolling 365-day period in units of lbs per ton of 100% acid produced; and

iii. The CEMS shall be installed, certified, calibrated, maintained, and operated in accordance with the applicable requirements of 40 C.F.R. §§ 60.11, 60.13, Part 60, Appendix B Performance Specification 2, and Part 60 Appendix F Procedure 1, except as otherwise provided in this Consent Decree or as provided in the approved Alternative Monitoring Plans described in Paragraph 13.b below. If an O<sub>2</sub> monitor is necessary, it shall meet 40 C.F.R. Part 60, Appendix B Performance Specification 3.

b. Defendant has submitted an Alternative Monitoring Plan for each of its Facilities that describes how Defendant proposes to implement the monitoring requirements of this Paragraph, including the methodology Defendant proposes to use to demonstrate compliance in the event of CEMS downtime lasting longer than 24 hours. Monitoring methods specified in this Consent Decree have been approved as appropriate alternative monitoring methods for purposes of NSPS, per 40 C.F.R. § 60.13(i). The Alternative Monitoring Plans are included as Appendix A. These plans supersede the corresponding SO<sub>2</sub> monitoring requirements of the NSPS and the applicable SO<sub>2</sub> monitoring requirements of the State Parties. Defendant shall implement the Alternative Monitoring Plans in the States of the

State Parties upon installation of the SO<sub>2</sub> CEMS at each of the sulfuric acid plants. In the States that are not State Parties (as well as in the South Coast Air Quality Management District), Defendant shall either reach agreement with those States to follow the Alternative Monitoring Plans in lieu of those States' SO<sub>2</sub> monitoring requirements, or else conduct SO<sub>2</sub> monitoring in compliance with those States' laws and regulations, in lieu of compliance with the Alternative Monitoring Plans.

c. Defendant shall take all steps necessary to avoid CEMS breakdowns and minimize CEMS downtime. This shall include, but is not limited to, operating and maintaining the CEMS in accordance with best practices and maintaining an on-site inventory of spare parts or other supplies necessary to make rapid repairs of the equipment.

d. In the event of CEMS downtime lasting longer than 24 hours, Defendant shall demonstrate compliance with the applicable emission limits in Paragraph 11 according to the procedures specified in the Alternative Monitoring Plans referenced in Paragraph 13.b. above.

#### 14. Performance Testing

a. By no later than 120 days after the effective date of this Consent Decree, Defendant shall conduct an initial

performance test measuring the emission rate of sulfuric acid mist from each of its sulfuric acid plants in accordance with the applicable requirements of 40 C.F.R Part 60 Appendix A, Reference Method 8 or such method that is approved by EPA. This performance test shall be used to demonstrate compliance with the acid mist emission limit established in Paragraph 11.k. and may serve as the NSPS performance test required under 40 C.F.R. § 60.8. Defendant shall take all steps necessary to assure accurate measurements of 100% sulfuric acid production during each test run.

b. By no later than 120 days after the Effective Date of any SO<sub>2</sub> emission limit established under Paragraph 11 of this Consent Decree, Defendant shall conduct a SO<sub>2</sub> performance test on the applicable sulfuric acid plant in accordance with the applicable requirements of 40 C.F.R. Part 60 Appendix A, Reference Method 8, and Part 60 Appendix B, Performance Specification 2. This test must consist of at least 9 reference method test runs and may serve as the CEMS relative accuracy test required under Performance Specification 2. If applicable, this test may also serve as the NSPS performance test required under 40 C.F.R. § 60.8. Defendant shall take all steps necessary to assure accurate measurements of 100% sulfuric acid

production during each test run.

c. Defendant shall notify the EPA Region and the State Party in which the sulfuric acid plant is located of its intent to conduct each performance test required by this Consent Decree, no later than 60 days before the performance test is conducted. This notification must include the scheduled date of the test, an emissions test protocol, a description of the planned operating rate and operating conditions, and the procedures that will be used to measure 100% sulfuric acid production. If EPA or the State Party requires any adjustment of the testing protocol or operating conditions, EPA or the State Party shall make a request for such adjustment no later than 30 days before the scheduled date of the performance test. Defendant shall make such adjustments and conduct the performance test in conformity with EPA's and the State's requirements.

d. Within the timeframe required by state and/or local provisions, but in any event, not to exceed 45 days after each performance test conducted in accordance with this Consent Decree, Defendant shall submit a report documenting the results of the performance test to the applicable EPA Region and State Party.

VI. PERMITS

15. Where any compliance obligation (including installation or construction of pollution control technology or equipment) under this Consent Decree requires Defendant to obtain a federal, state, or local permit or approval, Defendant shall submit timely and complete applications and take all other actions necessary to obtain all such permits or approvals. Defendant may seek relief under the provisions of Section IX of this Consent Decree (Force Majeure) for any delay in the performance of any such obligation resulting from a failure to obtain, or a delay in obtaining, any permit or approval required to fulfill such obligation, including, but not limited to, any necessary air, water and hazardous waste construction and operating permits, if Defendant has submitted timely and complete applications and has taken all other actions necessary to obtain all such permits or approvals, including without limitation, submitting to the federal, state and/or local permitting authority all relevant and available information requested by such agency after its receipt of the permit application. Any failure by Defendant to submit timely permit applications shall bar any use of Section IX (Force Majeure) of this Consent Decree, where a force majeure claim is based on

permitting delays. The EPA Region and the State Party in which the sulfuric acid plant is located shall use best efforts to review expeditiously all permit applications submitted to meet the requirements of this Consent Decree.

16. Future Emission Limits and Standards: As soon as practicable, but no later than ninety (90) days after the relevant Effective Date listed in Paragraph 11.i, Defendant shall submit administratively complete applications to the applicable federal, state or local agency to incorporate that emission limit or standard into federally-enforceable minor or major new source review permits or other permits that will ensure that the underlying emission limit or standard survives the termination of this Consent Decree. In light of the Title V permitting program in the State of Louisiana, Defendant shall submit to LDEQ's consolidated Title V permitting program, under the time frame specified by the previous sentence, appropriate applications for revisions to its existing Sulfuric Acid Plant Title V permit to ensure that the emission limits and standards that become effective after the Entry Date shall survive the termination of this Consent Decree. Following submission of the complete permit applications (or, for Baton Rouge #1 and #2, following submission of appropriate applications for Title V

permit revisions), Defendant shall cooperate with the applicable federal, state or local agency by promptly submitting to the applicable agency all available information that the applicable agency seeks following its receipt of the permit materials.

Promptly upon issuance of such permits or in conjunction with such permitting, Defendant shall file any applications necessary to incorporate the requirements of those permits into the Title V permit for the relevant sulfuric acid plant. Nothing in this Section shall prevent Defendant from filing such applications for permits or permit revisions prior to the Effective Date.

17. Emission Limits and Standards: Prior to termination of the Consent Decree, the following Consent Decree requirements shall be incorporated into operating permits, including Title V operating permits, under Paragraph 16 and shall survive termination of the Consent Decree:

a. The SO<sub>2</sub> emission limits established in Paragraph 11 of this Consent Decree;

b. The acid mist emission limit established in Paragraph 11.k. of this Consent Decree;

c. The monitoring requirements established in Paragraph 13 of this Consent Decree including the requirement to meet the quality assurance procedures required by 40 C.F.R. Part

60 Appendix F or any alternative procedures specified in relevant alternative monitoring plans or State requirements as provided in Paragraph 13.b. above;

d. A requirement that the SO<sub>2</sub> and acid mist emission limits as defined herein shall not be relaxed; and

e. The applicability of 40 C.F.R. Part 60, Subparts A and H (or any alternative procedures specified in relevant alternative monitoring plans or State requirements as provided in Paragraph 13.b. above) to the Facilities.

18. Mechanism for Title V Incorporation: The Parties agree that the incorporation of the requirements of this Consent Decree into Title V permits shall be in accordance with state Title V rules, including applicable administrative amendment provisions of such rules.

19. Defendant shall provide the EPA Region and the State in which the sulfuric acid plant is located with a copy of each application for a federally enforceable permit necessary to implement the requirements of this Consent Decree, as well as a copy of any permit proposed as a result of such application, to allow for timely participation in any public comment opportunity.

20. Emission Credit Generation

Defendant will neither generate nor use any SO<sub>2</sub> or acid mist emission reductions resulting from any projects required pursuant to this Consent Decree for the purpose of obtaining netting credits or offsets in any Prevention of Significant Deterioration (PSD), major non-attainment (meaning the non-attainment area New Source Review (NSR) program within the meaning of Part D of Subchapter I of the Act, 42 U.S.C. § 7510-7515, 40 C.F.R. Part 51), and/or minor NSR permit or permit proceeding; provided, however, that notwithstanding any other provision herein, (a) nothing in this Paragraph shall be construed to limit the generation and use of emissions credits or offsets respecting SO<sub>2</sub> or acid mist emission reductions that are either more stringent than the emissions limits established under the Consent Decree or achieved from sources not covered under the Consent Decree, as well as reductions of any other pollutant at any source; and (b) this Consent Decree is not intended to prohibit Defendant or the States in which the Facilities are located from using emission reductions from the installation of controls required by this Consent Decree in determining whether a project that includes both the installation of controls under this Consent Decree and other

construction or modification (whether or not such construction or modification affects the Facility's production capacity), and which is conducted prior to the Effective Date for the relevant Facility, and is permitted as a single or phased construction project, triggers PSD and/or NSR requirements.

VII. REPORTING REQUIREMENTS

21. Defendant shall submit the following reports:

a. Within 30 days after the end of each half calendar year (i.e., by January 30th, July 30th) after entry of this Consent Decree, until termination of this Decree pursuant to Section XVIII, Defendant shall submit a semi-annual report for the preceding six months that shall include the status of any construction or compliance measures necessary to meet the emission limits set forth in Paragraphs 11.a through 11.h; problems encountered or anticipated, together with implemented or proposed solutions; status of permit applications; operation and maintenance work; and any reports to State agencies. The first semi-annual report following entry of the Consent Decree shall be submitted by the later of (a) the end of the month following the end of the first full half calendar year after the date of entry, or (b) within 90 days of entry of the Consent Decree.

b. If Defendant violates, or has reason to believe that it may violate, any requirement of this Consent Decree or any applicable permits, Defendant shall notify the United States and the applicable State Party of such violation and its duration or anticipated likely duration, in writing, within 30 days of the day Defendant first becomes aware of the violation or potential violation, with an explanation of the violation's likely cause and of the remedial steps taken, or to be taken, to prevent or minimize such violation. If the cause of a violation cannot be fully explained at the time the report is due, Defendant shall so state in the report. Defendant shall investigate the cause of the violation and shall then submit an amendment to the report, including a full explanation of the cause of the violation, within 30 days of the day Defendant becomes aware of the cause of the violation. Nothing in this Paragraph or the following Paragraph relieves Defendant of its obligation to provide the notice required by Section IX of this Consent Decree (Force Majeure).

c. Whenever any violation of this Consent Decree or any applicable permits or any other event affecting Defendant's performance under this Decree, or the performance of its sulfuric acid plant, may pose an immediate threat to the public

health or welfare or the environment, Defendant shall notify the applicable EPA Region and State orally or by electronic or facsimile transmission as soon as possible, but no later than 24 hours after Defendant first knew of, or should have known of, the violation or event. This procedure is in addition to the requirements set forth in the preceding Paragraph.

22. All reports shall be submitted to the persons designated in Section XIV of this Consent Decree (Notices).

23. Each report submitted by Defendant under this Section shall be signed by a plant manager, a corporate official responsible for environmental management and compliance, or a corporate official responsible for plant management of the Defendant, and shall include the following certification:

I certify under penalty of law that I have examined and am familiar with the information submitted in this document and all attachments and that this document and its attachments were prepared either by me personally or under my direction or supervision in a manner designed to ensure that qualified and knowledgeable personnel properly gather and present the information contained therein. I further certify, based on my personal knowledge or on my inquiry of those individuals immediately responsible for obtaining the information, that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and

imprisonment for knowingly and willfully submitting a materially false statement.

24. The reporting requirements of this Consent Decree do not relieve Defendant of any reporting obligations required by the Act or implementing regulations, or by any other federal, state, or local law, regulation, permit, or other requirement.

25. Any information provided pursuant to this Consent Decree may be used by the United States in any proceeding to enforce the provisions of this Consent Decree and as otherwise permitted by law.

#### VIII. STIPULATED PENALTIES

26. If Defendant fails to pay the civil penalty required to be paid under Section IV of this Decree (Civil Penalty) when due, Defendant shall pay a stipulated penalty of \$500 per day for the first 30 days that the payment is late, and \$1,000 per day for each day thereafter that the payment is late. Late payment of the civil penalty shall be made in accordance with Section IV, Paragraphs 8 through 10, above. Each stipulated penalty due under this Paragraph shall be paid exclusively to the Party to whom Defendant failed to make timely payment of the civil penalty.

27. Stipulated Penalties shall be paid in accordance with

Section VIII, Paragraph 38, below. All transmittal correspondence shall state that any such payment is for late payment of the civil penalty due under this Decree, or for Stipulated Penalties for late payment, as applicable, and shall include the identifying information set forth in Section IV, Paragraphs 8 and 10, above.

28. Defendant shall be liable for Stipulated Penalties to the United States and the State Party in which the sulfuric acid plant is located for violations of this Consent Decree as specified below, unless excused under Section IX (Force Majeure).

29. Emission Limits: The following Stipulated Penalties shall accrue per violation per day after the relevant Effective Date for each violation of the requirements identified in Paragraph 11.a. through 11.i., 11.k. and 12, above:

a. Where the violation is less than 5% in excess of the applicable emission limit set forth in this Consent Decree:

<u>Penalty Per Violation Per Day</u>	<u>Period of Noncompliance</u>
\$500	1st through 30th day
\$1000	31st day and beyond

b. Where the violation is equal to or greater than 5% but less than 10% in excess of the applicable emission limit

set forth in this Consent Decree:

<u>Penalty Per Violation Per Day</u>	<u>Period of Noncompliance</u>
\$1000	1st through 14th day
\$1500	15th day through 30th day
\$2000	31st day and beyond

c. Where the violation is equal to or greater than 10% in excess of the applicable emission limit set forth in this Consent Decree:

<u>Penalty Per Violation Per Day</u>	<u>Period of Noncompliance</u>
\$1500	1st day through 14th day
\$2000	15th day through 30th day
\$2500	31st day and beyond

30. CEMS Requirements: The following Stipulated Penalties shall accrue per violation per day for each violation of the CEMS requirements identified in Paragraph 13:

<u>Penalty Per Violation Per Day</u>	<u>Period of Noncompliance</u>
\$1500	1st through 14th day
\$2000	15th through 30th day
\$2500	31st day and beyond

31. Performance Testing: The following Stipulated penalties shall accrue per violation per day for each violation of the performance testing requirements identified in

Paragraph 14:

<u>Penalty Per Violation Per Day</u>	<u>Period of Noncompliance</u>
\$1000	1st through 14th day
\$1500	15th through 30th day
\$2000	31st day and beyond

32. Permitting Requirements: The following Stipulated Penalties shall accrue per violation per day for each violation of the permitting requirements identified in Section VI of this Consent Decree:

<u>Penalty Per Violation Per Day</u>	<u>Period of Noncompliance</u>
\$1000	1st through 14th day
\$1500	15th through 30th day
\$2000	31st day and beyond

33. Reporting Requirements: The following Stipulated Penalties shall accrue per violation per day for each violation of the reporting and notification requirements of Section VII of this Consent Decree:

<u>Penalty Per Violation Per Day</u>	<u>Period of Noncompliance</u>
\$150	1st through 14th day
\$250	15th through 30th day
\$500	31st day and beyond

34. The following Stipulated Penalties shall accrue per

violation per day for Defendant's failure to comply with any requirement of this Consent Decree not specifically referenced in Paragraphs 26 through 33 above, including, but not limited to, failing to perform any obligation required by any work plan or schedule approved under this Decree, within the specified time schedules established by or approved under this Decree:

<u>Penalty Per Violation Per Day</u>	<u>Period of Noncompliance</u>
\$150	1st through 14th day
\$250	15th through 30th day
\$500	31st day and beyond

35. Stipulated Penalties under this Section shall begin to accrue on the day after performance is due or on the day a violation occurs, whichever is applicable, and shall continue to accrue until performance is satisfactorily completed or until the violation ceases. Stipulated Penalties shall accrue simultaneously for separate violations of this Consent Decree. Defendant shall pay any Stipulated Penalty within 45 days of receiving the United States' or the State Party's written demand. The United States and/or the State Party in which the sulfuric acid plant is located, may seek Stipulated Penalties under this Section. Any stipulated penalties paid under this Section shall be paid 50 percent to the United States and 50

percent to the relevant State Party regardless of which Party made the demand.

36. The United States and/or the State Parties may, in the unreviewable exercise of their discretion, reduce or waive Stipulated Penalties otherwise due that sovereign under this Consent Decree. The determination by one sovereign not to seek Stipulated Penalties, or subsequently to waive or reduce the amount it seeks, shall not preclude the other sovereign from seeking the full amount of Stipulated Penalties owing to that sovereign.

37. Stipulated Penalties shall continue to accrue as provided in Paragraph 35, above, during any Dispute Resolution, but need not be paid until the following:

a. If the dispute is resolved by agreement or by a decision of EPA or the State Party that is not appealed to the Court, Defendant shall pay accrued penalties determined to be owing, together with interest, at the rate specified in 28 U.S.C. § 1961, to the United States and/or the State Party within 30 days of the effective date of the agreement or the receipt of EPA's or the State Party's decision or order.

b. If the dispute is appealed to the Court and the United States and/or the State Party prevails in whole or in

part, Defendant shall pay all accrued penalties determined by the Court to be owing, together with interest, at the rate specified in 28 U.S.C. § 1961, within 60 days of receiving the Court's decision or order, except as provided in Subparagraph c, below.

c. If any Party appeals the District Court's decision, Defendant shall pay all accrued penalties determined to be owing, together with interest at the rate specified in 28 U.S.C. § 1961, no later than 30 days after the administrative decision or judicial order, judgment or decree resolving the dispute becomes final and not subject to any further appeal.

38. Defendant shall pay Stipulated Penalties owing to the United States in accordance with Section IV, Paragraph 8, above, or by certified or cashier's check in the amount due, payable to the "U.S. Department of Justice," referencing DOJ No. 90-5-2-1-08500 and United States Attorney's Office file number 2006V00872, and delivered to the office of the United States Attorney, Northern District of Indiana, Hammond Division, 5400 Federal Plaza, Hammond, Indiana 46320, (219) 937-5500.

Defendant shall pay Stipulated Penalties owing to the State Parties in accordance with Section IV, Paragraph 10, above.

39. No amount of the Stipulated Penalties to be paid by

Defendant shall be used to reduce its federal or state tax obligations.

40. If Defendant fails to pay Stipulated Penalties according to the terms of this Consent Decree, Defendant shall be liable for interest at the rate specified in 28 U.S.C. § 1961, accruing as of the date payment became due.

41. Subject to the provisions of Section XII of this Consent Decree (Effect of Settlement/Reservation of Rights), the Stipulated Penalties provided for in this Consent Decree shall be in addition to any other rights, remedies, or sanctions available to the United States for Defendant's violation of this Consent Decree or applicable law. Where a violation of this Consent Decree is also a violation of the PSD/NSR Requirements, the NSPS Requirements, the SIP Requirements and/or the Title V Requirements, Defendant shall be allowed a credit, for any Stipulated Penalties paid, against any statutory penalties imposed for such violation.

IX. FORCE MAJEURE

42. A "force majeure" is any event beyond the control of Defendant, its contractors, or any entity controlled by Defendant that delays the performance of any obligation under this Consent Decree despite Defendant's Best Efforts to fulfill

the obligation. "Best Efforts" includes anticipating any such potential event and addressing the effects of any such event (a) as it is occurring and (b) after it has occurred, to prevent or minimize any resulting delay to the greatest extent practicable. "Force majeure" does not include Defendant's financial inability to perform any obligation under this Consent Decree.

43. If any event occurs which causes or may cause a delay or impediment to performance in complying with any provision of this Consent Decree, Defendant shall notify the United States, the applicable EPA Regional office, and the relevant State Party in writing as soon as practicable, but in any event within fourteen (14) days of the date when Defendant first knew of the event or should have known of the event by the exercise of due diligence. In this notice, Defendant shall specifically reference this Paragraph 43 of this Consent Decree and describe the anticipated length of time the delay may persist, the cause or causes of the delay, and the measures taken or to be taken by Defendant to prevent or minimize the delay and the schedule by which those measures shall be implemented. Defendant shall take Best Efforts to avoid or minimize such delays. The notice required by this Section shall be effective upon the mailing of the same by overnight mail or by certified mail, return receipt

requested, to the applicable EPA Regional Office and State Party, as appropriate, as specified in Section XIV (Notice).

44. Failure by Defendant to substantially comply with the notice requirements of Paragraph 43 as specified above shall render this Section IX (Force Majeure) voidable by the United States, in consultation with the relevant State Party, as to the specific event for which Defendant has failed to comply with such notice requirement, and, if voided, is of no effect as to the particular event involved.

45. The United States, after consultation with the relevant State Party, shall notify Defendant in writing regarding the United States' position regarding Defendant's claim of a delay or impediment to performance within thirty (30) days of receipt of the force majeure notice provided under Paragraph 43.

46. If the United States, after consultation with the relevant State Party, agrees that the delay or impediment to performance has been or will be caused by circumstances beyond the control of the Defendant (including any entity controlled by the Defendant) and that Defendant could not have prevented the delay by the exercise of Best Efforts, or if the delay or impediment to performance is deemed to be a force majeure under

Paragraph 49, the appropriate Parties shall stipulate to an extension of the required deadline(s) for all requirement(s) affected by the delay by a period equivalent to the delay actually caused by such circumstances. Such stipulation shall be filed as a material modification to the Consent Decree pursuant to the modification procedures established by this Consent Decree in Paragraph 76. Defendant shall not be liable for stipulated penalties for the period of any such delay.

47. If the United States, after consultation with the relevant State Party, does not accept Defendant's claim of delay or impediment to performance, Defendant must submit the matter to the Court for resolution to avoid payment of stipulated penalties, by filing a petition for determination with the Court by no later than forty-five (45) days after receipt of the notice provided under Paragraph 45 above. Once Defendant has submitted this matter to the Court, the United States and the relevant State Party will have forty-five (45) days to file their responses to the petition. If the Court determines that the delay or impediment to performance has been or will be caused by circumstances beyond the control of the Defendant including any entity controlled by Defendant and that the delay could not have been prevented by Defendant by the exercise of

Best Efforts, Defendant shall be excused as to that event(s) and delay (including stipulated penalties), for a period of time equivalent to the delay caused by such circumstances.

48. Defendant will bear the burden of proving that any delay of a requirement(s) of this Consent Decree was caused by or will be caused by circumstances beyond its control, including any entity controlled by it, and that it could not have prevented the delay by the exercise of Best Efforts. Defendant shall also bear the burden of proving the duration and extent of any delay(s) attributable to such circumstances. Any extension of one compliance date based on a particular event may, but does not necessarily, result in an extension of a subsequent compliance date or dates.

49. Unanticipated or increased costs or expenses associated with the performance of Defendant's obligations under this Consent Decree shall not constitute circumstances beyond its reasonable control, or serve as the basis for an extension of time under this Section IX. However, the failure of a permitting authority to issue a necessary construction or operating permit in a timely fashion is an event of force majeure where the failure of the permitting authority to issue the relevant permit is beyond the control of the Defendant and

the Defendant has taken all steps available to it to obtain the necessary permit. For the Houston #2, Baton Rouge #1 and Baton Rouge #2 plants which require a Resource Conservation and Recovery Act (RCRA) permit, if a RCRA permit modification is necessary for any construction required by this Consent Decree and the permitting authority has failed to issue such RCRA permit modification within 18 months of Defendant's full and complete permit application submittal, and the failure of the permitting authority to act is beyond Defendant's control and Defendant has used Best Efforts with respect to the permit and the construction for which the permit is required, then each additional day when such permit is not issued, beyond the 18 months after Defendant's full and complete permit application submittal, shall be considered a day of delay caused by a force majeure, provided that Defendant's full and complete permit application submittal was made at least 18 months before the relevant Effective Date.

50. Notwithstanding any other provision of this Consent Decree, the Court shall not draw any inferences nor establish any presumptions adverse to either party as a result of Defendant's serving of a force majeure notice or the Parties' inability to reach agreement.

51. As part of the resolution of any matter submitted to this Court under this Section IX, the appropriate Parties by agreement, or the Court by order, may in appropriate circumstances extend or modify the schedule for completion of work under the Consent Decree to account for the delay in the work that occurred as a result of any delay or impediment to performance agreed to by the United States or approved by this Court. Defendant shall be liable for stipulated penalties for its failure thereafter to complete the work in accordance with the extended or modified schedule.

X. DISPUTE RESOLUTION

52. Unless otherwise expressly provided for in this Consent Decree, the dispute resolution procedures of this Section shall be the exclusive mechanism to resolve disputes arising under or with respect to this Consent Decree. Defendant's failure to seek resolution of a dispute under this Section shall preclude Defendant from raising any such issue as a defense to an action by the United States to enforce any obligation of Defendant arising under this Decree.

53. The dispute resolution procedure set forth in this Section X shall be available to resolve any and all disputes arising under this Consent Decree, provided that the Party

making such application has made a good faith attempt to resolve the matter with the other Party.

54. The dispute resolution procedure required herein shall be invoked upon the giving of written notice by one of the Parties to this Consent Decree to another advising the other appropriate Party(ies) of a dispute pursuant to Section X. The notice shall describe the nature of the dispute, and shall state the noticing Party's position with regard to such dispute. The Party or Parties receiving such notice will acknowledge receipt of the notice and the Parties shall expeditiously schedule a meeting to discuss the dispute informally not later than fourteen (14) days from the receipt of such notice.

55. Disputes submitted to dispute resolution shall, in the first instance, be the subject of informal negotiations between the Parties. Such period of informal negotiations shall not extend beyond thirty (30) days from the date of the first meeting between representatives of the Parties, unless it is agreed by the Parties that this period should be shortened or extended.

56. In the event that the Parties are unable to reach agreement during such informal negotiations period, the United States or the relevant State Party, as applicable, shall provide

Defendant with a written summary of its/their position regarding the dispute. The position advanced by the United States and/or the relevant State Party, as applicable, will be considered binding unless, within forty-five (45) days of Defendant's receipt of the written summary, Defendant files with the Court a petition which describes the nature of the dispute. The United States or the relevant State Party shall respond to the petition within forty-five (45) days of filing.

57. In resolving a dispute between the parties under these circumstances, Defendant shall bear the burden of demonstrating that its position complies with this Consent Decree and the Act. The Court shall decide the dispute based upon applicable principles of law. The United States reserves the right to argue that its position is reviewable only on the administrative record and must be upheld unless arbitrary and capricious or otherwise not in accordance with law.

58. In the event that the EPA and the relevant State Party are unable to reach agreement amongst themselves with regard to the Defendant's claim, the position of the United States shall be the Plaintiffs' final position. A dissenting Plaintiff-Intervenor may file such other pleadings expressing its position as allowed by the Court.

59. Where the nature of the dispute is such that a more timely resolution of the issue is required, the time periods set forth in Section X may be shortened upon motion of one of the Parties to the dispute and approval of the Court.

60. The Parties do not intend that the invocation of this Section X by a Party cause the Court to draw any inferences nor establish any presumptions adverse to either Party as a result of invocation of this Section.

61. As part of the resolution of any dispute submitted to the dispute resolution, the Parties, by agreement, or this Court, by order, may, in appropriate circumstances, extend or modify the schedule for completion of work under this Consent Decree to account for the delay in the work that occurred as a result of dispute resolution. Defendant shall be liable for stipulated penalties for its failure thereafter to complete the work in accordance with the extended or modified schedule.

#### XI. INFORMATION COLLECTION AND RETENTION

62. The United States, the State Parties, and their representatives, including attorneys, contractors, and consultants, shall have the right of entry into any of the Facilities covered by this Consent Decree, at all reasonable times, upon presentation of credentials, to:

a. monitor the progress of activities required under this Consent Decree;

b. verify any data or information submitted to the United States or a State Party in accordance with the terms of this Consent Decree;

c. obtain samples and, upon request, splits of any samples taken by Defendant or its representatives, contractors, or consultants;

d. obtain documentary evidence, including photographs and similar data; and

e. assess Defendant's compliance with this Consent Decree.

63. Until three years after the termination of this Consent Decree, or until three years after the satisfaction of portions of this Consent Decree consistent with Paragraph 78 (Partial Termination), whichever occurs first, Defendant shall retain all non-identical copies of all documents, records, or other information (including documents, records, or other information in electronic form) in its or its contractors' or agents' possession or control, or that come into its or its contractors' or agents' possession or control, and that relates in any manner to Defendant's performance of its obligations

under this Consent Decree. This information-retention requirement shall apply regardless of any contrary corporate or institutional policies or procedures. At any time during this information-retention period, the United States or a State Party may request copies of any documents, records, or other information required to be maintained under this Paragraph.

64. If Defendant desires to revert to its ordinary document retention policy in regards to documents it is otherwise required to retain, at least 3 months before the expiration of the document retention period, Defendant shall notify the United States of its intention to revert to its ordinary document retention policy. Should the United States request copies, Defendant may assert that certain documents, records, or other information is privileged under the attorney-client privilege or any other privilege recognized by federal law. If Defendant asserts such a privilege, it shall provide the following: (1) the title of the document, record, or information; (2) the date of the document, record, or information; (3) the name and title of each author of the document, record, or information; (4) the name and title of each addressee and recipient; (5) a description of the subject of the document, record, or information; and (6) the privilege asserted

by Defendant. However, no documents, records, or other information created or generated pursuant to the requirements of this Consent Decree shall be withheld on grounds of privilege.

65. Defendant may also assert that information required to be provided under this Section is protected as Confidential Business Information (CBI) under 40 C.F.R. Part 2. As to any information that Defendant seeks to protect as CBI, Defendant shall follow the procedures set forth in 40 C.F.R. Part 2.

66. This Consent Decree in no way limits or affects any right of entry and inspection, or any right to obtain information, held by the United States or the States pursuant to applicable federal or state laws, regulations, or permits, nor does it limit or affect any duty or obligation of Defendant to maintain documents, records, or other information imposed by applicable federal or state laws, regulations, or permits.

XII. EFFECT OF SETTLEMENT/RESERVATION OF RIGHTS

67. This Consent Decree resolves all the civil claims of the United States and the State Parties for the violations alleged in the Complaint, and in the Complaints in Intervention filed in this action, from the date those claims accrued through the date of entry. The claims so resolved include, without limitation, claims for SO<sub>2</sub> and acid mist emissions in alleged

violation of PSD, NSR, NSPS, Subpart H and Title V, and the corresponding SIP requirements, based on construction, modification or reconstruction projects at the sulfuric acid production units at the Facilities up to the filing of the Complaint in this action.

68. The United States and the States reserve all legal and equitable remedies available to enforce the provisions of this Consent Decree, except as expressly stated in Paragraph 67. This Consent Decree shall not be construed to limit the rights of the United States or the State Parties to obtain penalties or injunctive relief under the Act or implementing regulations, or under other federal or state laws, regulations, or permit conditions, except as expressly specified in Paragraph 67. The United States and the State Parties further reserve all legal and equitable remedies to address any imminent and substantial endangerment to the public health or welfare or the environment arising at, or posed by, Defendant's Facilities, whether related to the violations addressed in this Consent Decree or otherwise.

69. This Consent Decree is not a permit, or a modification of any permit, under any federal, State, or local laws or regulations. Defendant is responsible for achieving and maintaining compliance with all applicable federal, State, and

local laws, regulations, and permits; and Defendant's compliance with this Consent Decree shall be no defense to any action commenced pursuant to any such laws, regulations, or permits. Except as otherwise provided in this Consent Decree, the United States and the State Parties do not, by their consent to the entry of this Consent Decree, warrant or aver in any manner that Defendant's compliance with any aspect of this Consent Decree will result in compliance with provisions of the Act, or with any other provisions of federal, State, or local laws, regulations, or permits. The Parties agree that this Consent Decree represents diligent prosecution of the claims alleged in the Complaint.

70. This Consent Decree does not limit or affect the rights of Defendant or of the United States or the State Parties against any third parties, not party to this Consent Decree, nor does it limit the rights of third parties, not party to this Consent Decree, against Defendant, except as otherwise provided by law.

71. This Consent Decree shall not be construed to create rights in, or grant any cause of action to, any third party not party to this Consent Decree.

XIII. COSTS

72. The Parties shall bear their own costs of this action, including attorneys' fees, except that the United States and the State Parties shall be entitled to collect the costs (including attorneys' fees) incurred in any action necessary to collect any portion of the civil penalty or any Stipulated Penalties due but not paid by Defendant.

XIV. NOTICES

73. Unless otherwise specified herein, whenever notifications, submissions, or communications are required by this Consent Decree, they shall be made in writing and addressed to the United States Department of Justice, EPA Headquarters, and the EPA Region and the State Party where the relevant sulfuric acid plant is located, as follows:

To the United States:

Chief, Environmental Enforcement Section  
Environment and Natural Resources Division  
U.S. Department of Justice  
Box 7611 Ben Franklin Station  
Washington, D.C. 20044-7611  
Re: DOJ No. 90-5-2-1-08500

and

To EPA:

David Schnare  
U.S. Environmental Protection Agency Headquarters

Ariel Rios Building  
1200 Pennsylvania Avenue, N.W.  
Mailcode 2242A  
Washington D.C. 20460

Nathan Frank  
U.S. Environmental Protection Agency  
Region 5  
AE-17J  
77 West Jackson Blvd.  
Chicago, Il 60604

Cynthia A. King  
U.S. Environmental Protection Agency  
Region 5  
C-14J  
77 West Jackson Blvd.  
Chicago, Il 60604

Jan Gerro  
U.S. Environmental Protection Agency  
Region 6  
1445 Ross Avenue  
Suite 1200  
Mailcode 6RCEA  
Dallas, TX 75202

Himanshu Vyas  
U.S. Environmental Protection Agency  
Region 6  
1445 Ross Avenue  
Suite 1200  
Mailcode 6ENAT  
Dallas, TX 75202

Thomas P. Mintz  
U.S. Environmental Protection Agency  
Region 9  
75 Hawthorne Street  
Mailcode ORC-2  
San Francisco, CA 94105

John J. Kim

U.S. Environmental Protection Agency  
Region 9  
75 Hawthorne Street  
Mailcode AIR-5  
San Francisco, CA 94105

To the State of Indiana:

Lynne Sullivan  
Senior Environmental Manager  
Office of Enforcement/Air Section - Mail Code 60-02  
Indiana Department of Environmental Management  
100 N. Senate Avenue  
Indianapolis, IN 46204-2251

Thomas Nyhan  
Hammond Department of Environmental Management  
Hammond City Hall, Room 304  
5925 Calumet Avenue  
Hammond, IN 46320

To the Bay Area Air Quality Management District

Alexander Crockett  
Bay Area Air Quality Management District  
939 Ellis Street  
San Francisco, CA 94109

Brian C. Bunger  
Bay Area Air Quality Management District  
Office of District Counsel  
939 Ellis Street  
San Francisco, CA 94109

To the State of Louisiana:

Peggy M. Hatch  
Administrator, Enforcement Division  
Office of Environmental Compliance  
Louisiana Department of Environmental Quality  
P.O. Box 4312  
Baton Rouge, Louisiana 70821-4312

To Defendant:

James J. Dragna  
Bingham McCutchen LLP  
Suite 4400  
355 South Grand Avenue  
Los Angeles, CA 90071

Frank M. Sardo  
Rhodia Inc.  
CN 7500  
Cranbury, NJ 08512-7500

Paul Linskey  
Rhodia Inc.  
CN 7500  
Cranbury, NJ 08512-7500

Any Party may, by written notice to the other Parties, change its designated notice recipient or notice address provided above. Notices submitted pursuant to this Section shall be deemed submitted upon mailing, unless otherwise provided in this Consent Decree or by mutual agreement of the Parties in writing.

XV. EFFECTIVE DATE

74. The effective date of this Consent Decree shall be the date upon which this Consent Decree is entered by the Court.

XVI. RETENTION OF JURISDICTION

75. The Court shall retain jurisdiction over this case until termination of this Consent Decree, for the purpose of resolving disputes arising under this Decree or entering orders modifying this Decree, pursuant to Sections X and XVII, or

effectuating or enforcing compliance with the terms of this Decree.

XVII. MODIFICATION

76. The terms of this Consent Decree may be modified only by a subsequent written agreement signed by all the Parties. Where the modification constitutes a material change to any term of this Decree, it shall be effective only upon approval by the Court.

XVIII. TERMINATION

77. Complete Termination: After Defendant has maintained continuous satisfactory compliance with the requirements of the Act applicable to the emissions of SO<sub>2</sub> or sulfuric acid mist from its sulfuric acid plants, and this Consent Decree, for a period of one year after achieving compliance with all of the requirements of this Consent Decree, and has paid the civil penalty and any accrued Stipulated Penalties as required by this Consent Decree, Defendant may serve upon the United States and the State Parties a Request for Termination, stating that Defendant has satisfied those requirements, together with all necessary supporting documentation.

78. Partial Termination: If Defendant has satisfied its obligations and requirements under this Consent Decree with

respect to an individual Facility, and Defendant can demonstrate continuous compliance with the requirements of this Consent Decree at that Facility for a period of one year, Defendant may serve upon the United States and the relevant State Party, a Request for Partial Termination with regard to that Facility, stating that Defendant has satisfied the requirements of this Consent Decree with respect to that Facility, together with a certification of continuous compliance in substantially the form provided in Paragraph 23, and all necessary supporting documentation.

79. Following receipt by the United States and the State Parties of Defendant's Request for Termination, or Request for Partial Termination, the Parties shall confer informally concerning the Request and any disagreement that the Parties may have as to whether Defendant has satisfactorily complied with the requirements for termination of this Consent Decree. If the United States after consultation with the State Parties agrees that the Decree, or portions thereof, may be terminated, the Parties shall submit, for the Court's approval, a joint stipulation terminating the Decree.

80. If the United States after consultation with the State Parties does not agree that the Decree may be terminated,

Defendant may invoke Dispute Resolution under Section X of this Decree. However, Defendant shall not seek Dispute Resolution of any dispute regarding termination under Section X of this Consent Decree, until 30 days after service of its Request for Termination.

XIX. PUBLIC PARTICIPATION

81. This Consent Decree shall be lodged with the Court for a period of not less than 30 days for public notice and comment in accordance with 28 C.F.R. § 50.7. The United States reserves the right to withdraw or withhold its consent if the comments regarding the Consent Decree disclose facts or considerations indicating that the Consent Decree is inappropriate, improper, or inadequate. Defendant consents to entry of this Consent Decree without further notice.

82. The Parties agree and acknowledge that final approval by Plaintiff-Intervenor the State of Louisiana, Department of Environmental Quality, and entry of this Consent Decree is subject to the requirements of La. R.S. 30:2050.7, which provides for public notice of this Consent Decree in newspapers of general circulation and the official journals of parishes in which the Baton Rouge #1 and #2 sulfuric acid plants are located, an opportunity for public comment, consideration of any

comments, and concurrence by the State Attorney General. The State of Louisiana reserves the right to withdraw or withhold consent if the comments regarding this Consent Decree disclose facts or considerations which indicate that this Consent Decree is inappropriate, improper or inadequate.

XX. SIGNATORIES/SERVICE

83. Each undersigned representative of Defendant and other parties to the Decree and the Assistant Attorney General for the Environment and Natural Resources Division of the Department of Justice (or his or her designee) certifies that he or she is fully authorized to enter into the terms and conditions of this Consent Decree and to execute and legally bind the Party he or she represents to this document.

84. This Consent Decree may be signed in counterparts, and its validity shall not be challenged on that basis.

85. Defendant agrees not to oppose entry of this Consent Decree by the Court or to challenge any provision of the Decree, unless the United States has notified Defendant in writing that it no longer supports entry of the Decree.

86. Defendant agrees to accept service of process by mail with respect to all matters arising under or relating to this Consent Decree and to waive the formal service requirements set

forth in Rules 4 and 5 of the Federal Rules of Civil Procedure and any applicable Local Rules of this Court including, but not limited to, service of a summons.

XXI. INTEGRATION

87. This Consent Decree and its Appendices constitute the final, complete, and exclusive agreement and understanding among the Parties with respect to the settlement embodied in the Decree and supersedes all prior agreements and understandings, whether oral or written, concerning the settlement embodied herein. Other than the Appendices, which are attached to and incorporated in this Decree, and deliverables that are subsequently submitted and approved pursuant to this Decree, no other document, nor any representation, inducement, agreement, understanding, or promise, constitutes any part of this Decree or the settlement it represents, nor shall it be used in construing the terms of this Decree.

XXII. FINAL JUDGMENT

88. Upon approval and entry of this Consent Decree by the Court, this Consent Decree shall constitute a final judgment of the Court in this action as to the United States, the State Parties, and Defendant. The Court finds that there is no just reason for delay and therefore enters this judgment as a final

judgment under Fed. R. Civ. P. 54 and 58.

XXIII. APPENDICES

The following appendices are attached to and incorporated into this Consent Decree:

"Appendix A" is the Alternative Monitoring Plans for the Rhodia Facilities.

Dated and entered this \_\_\_\_ day of \_\_\_\_\_, 2007.

**COPY**

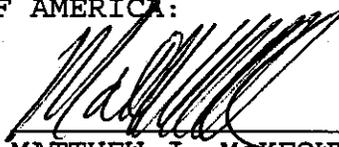
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UNITED STATES DISTRICT JUDGE  
Northern District of Indiana

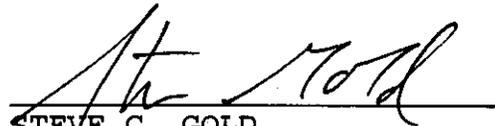
FOR PLAINTIFF UNITED STATES OF AMERICA:

THE UNDERSIGNED PARTIES enter into this Consent Decree in the matter of United States v. Rhodia Inc., (N.D. Ind.), relating to alleged violations of the Clean Air Act:

FOR PLAINTIFF UNITED STATES OF AMERICA:



MATTHEW J. MCKEOWN  
Acting Assistant Attorney General  
Environment and Natural Resources  
Division  
United States Department of  
Justice



STEVE C. GOLD  
Senior Attorney  
Environmental Enforcement Section  
Environment and Natural Resources  
Division  
United States Department of  
Justice  
Post Office Box 7611  
Washington, D.C. 20044  
(202) 514-5260  
(202) 616-6584 (FAX)



CYNTHIA A. KING  
Special Trial Attorney  
Environmental Enforcement Section  
Environment and Natural Resources  
Division  
United States Department of  
Justice  
77 W. Jackson Blvd.  
Chicago, IL 60604  
312-886-6831

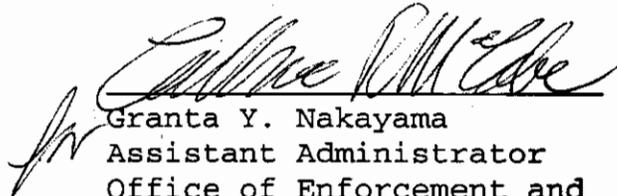
JOSEPH S. VAN BOKKELEN  
United States Attorney  
Northern District of Indiana

*Wayne T. Ault*

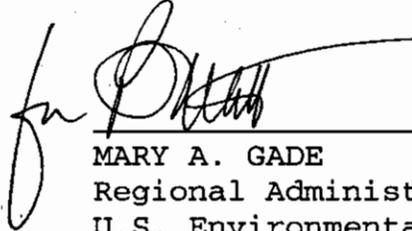
---

WAYNE T. AULT  
Assistant United States Attorney  
Northern District of Indiana  
5400 Federal Plaza, Suite 1500  
Hammond, Indiana 46320  
Telephone: 219-937-5500  
Telecopy: 219-852-2770

THE UNDERSIGNED PARTIES enter into this Consent Decree in the matter of United States v. Rhodia Inc., (N.D. Ind.), relating to alleged violations of the Clean Air Act:

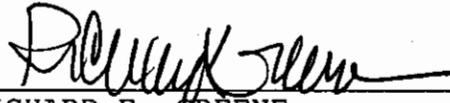
  
Granta Y. Nakayama  
Assistant Administrator  
Office of Enforcement and  
Compliance Assurance

THE UNDERSIGNED PARTIES enter into this Consent Decree in the matter of United States v. Rhodia Inc., (N.D. Ind.), relating to alleged violations of the Clean Air Act:

A handwritten signature in black ink, appearing to read 'for P. Gade', written over a horizontal line.

MARY A. GADE  
Regional Administrator  
U.S. Environmental Protection  
Agency  
Region 5

THE UNDERSIGNED PARTIES enter into this Consent Decree in the matter of United States v. Rhodia Inc., (N.D. Ind.), relating to alleged violations of the Clean Air Act:



RICHARD E. GREENE  
Regional Administrator  
U.S. Environmental Protection  
Agency  
Region 6

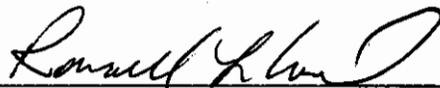
THE UNDERSIGNED PARTIES enter into this Consent Decree in the matter of United States v. Rhodia Inc., (N.D. Ind.), relating to alleged violations of the Clean Air Act:



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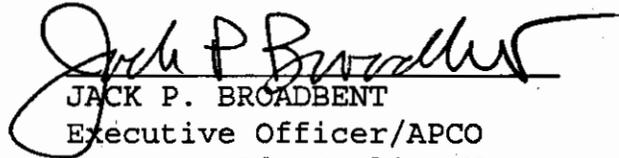
WAYNE NASTRI  
Regional Administrator  
U.S. Environmental Protection  
Agency  
Region 9

THE UNDERSIGNED PARTIES enter into this Consent Decree in the matter of United States v. Rhodia Inc., (N.D. Ind.), relating to alleged violations of the Clean Air Act:

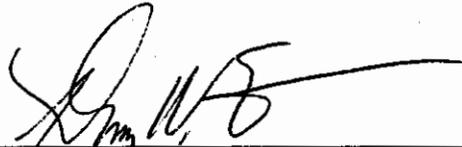


RONALD L. NOVAK  
Director  
Department of Environmental  
Management  
City of Hammond, Indiana

THE UNDERSIGNED PARTIES enter into this Consent Decree in the matter of United States v. Rhodia Inc., (N.D. Ind.), relating to alleged violations of the Clean Air Act:

  
JACK P. BROADBENT  
Executive Officer/APCO  
Bay Area Air Quality Management  
District

THE UNDERSIGNED PARTIES enter into this Consent Decree in the matter of United States v. Rhodia Inc., (N.D. Ind.), relating to alleged violations of the Clean Air Act:



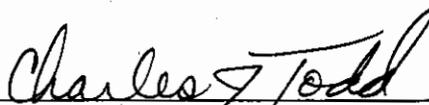
THOMAS W. EASTERLY

Commissioner

Indiana Department of

Environmental Management

Indianapolis, Indiana



CHARLES J. TODD

Chief Operating Officer

Office of the Indiana Attorney  
General

THE UNDERSIGNED PARTIES enter into this Consent Decree in the matter of United States v. Rhodia Inc., (N.D. Ind.), relating to alleged violations of the Clean Air Act:

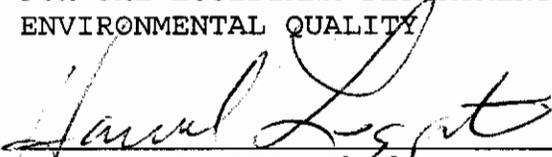
FOR THE STATE OF LOUISIANA

Date: \_\_\_\_\_

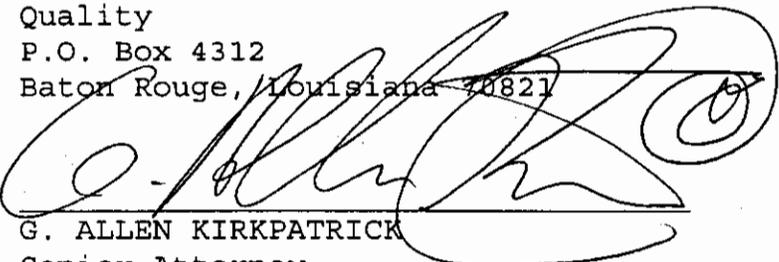
\_\_\_\_\_  
CHARLES C. FOTI, Jr.  
Attorney General  
Louisiana Department of Justice  
P.O. Box 94005  
Baton Rouge, Louisiana 70804

FOR THE LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY

Date: 3/19/00

  
\_\_\_\_\_  
HAROLD LEGGETT, Ph.d.  
Assistant Secretary  
Office of Environmental Compliance  
Louisiana Department of Environmental Quality  
P.O. Box 4312  
Baton Rouge, Louisiana 70821

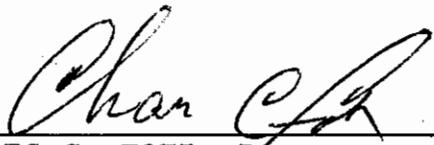
Date: 19 March 2007

  
\_\_\_\_\_  
G. ALLEN KIRKPATRICK  
Senior Attorney  
Office of the Secretary  
Legal Affairs Division  
Louisiana Department of Environmental Quality  
P.O. Box 4302  
Baton Rouge, Louisiana 70821

THE UNDERSIGNED PARTIES enter into this Consent Decree in the matter of United States v. Rhodia Inc., (N.D. Ind.), relating to alleged violations of the Clean Air Act:

FOR THE STATE OF LOUISIANA

Date: 3-19-07

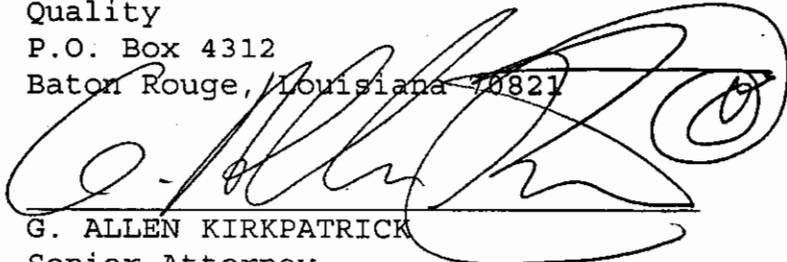
  
\_\_\_\_\_  
CHARLES C. FOTI, JR.  
Attorney General  
Louisiana Department of Justice  
P.O. Box 94005  
Baton Rouge, Louisiana 70804

FOR THE LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY

Date: 3/19/07

  
\_\_\_\_\_  
HAROLD LEGGETT, Ph.d.  
Assistant Secretary  
Office of Environmental Compliance  
Louisiana Department of Environmental Quality  
P.O. Box 4312  
Baton Rouge, Louisiana 70821

Date: 19 March 2007

  
\_\_\_\_\_  
G. ALLEN KIRKPATRICK  
Senior Attorney  
Office of the Secretary  
Legal Affairs Division  
Louisiana Department of Environmental Quality  
P.O. Box 4302  
Baton Rouge, Louisiana 70821

THE UNDERSIGNED PARTIES enter into this Consent Decree in the matter of United States v. Rhodia Inc., (N.D. Ind.), relating to alleged violations of the Clean Air Act:

FOR DEFENDANT RHODIA INC.:

  
James Harton, President  
Rhodia Inc.

If different from above, the following is the name and address of Settling Defendant's agent for service and the name and address of Settling Defendant's counsel. Counsel may act as agent for service.

Agent for Service

Attorney

\_\_\_\_\_  
Name

\_\_\_\_\_  
Name

APPENDIX A

**Alternative Monitoring Plan for SO<sub>2</sub> Emissions  
Rhodia Inc. Baton Rouge, LA Unit 1  
Single Absorption Sulfuric Acid Regeneration Plant with Scrubber**

**Justification for Using an Alternative Monitoring Plan (AMP) for SO<sub>2</sub> emissions**

The regulations that established the NSPS for sulfuric acid plants are over 30 years old. At the time, the regulatory standard was established as 4 lb of SO<sub>2</sub> emissions per ton of 100 % sulfuric acid produced, and compliance with the standard was to be demonstrated using a calculation similar to Equation 1 below. Regulations required the use of a CEMS to measure SO<sub>2</sub> concentration at the stack (M2), but only required measurement of SO<sub>2</sub> entering the converter by suitable method three times per calendar day. Plants typically rely on the use of a Reich test once per shift to establish the SO<sub>2</sub> concentration entering the converter (M1). While the stack measurement represented a nearly continuous real time indication of the stack concentration, performing a Reich test once per shift for the converter inlet concentration provides little more than a random sample once every eight hours.

The methodology proposed in this AMP will provide a more continuous real-time indication of compliance by using a process analyzer to measure the converter inlet SO<sub>2</sub> concentration. While this analyzer will be nearly identical to the CEMS that is commonly used at the stack, it will not be able to meet all of the standards that are usually applied to a CEMS because of the process conditions and / or physical limitations of an existing facility. For example, it is not feasible to modify the existing ductwork around the analyzer to meet the normal guidelines for straight runs of pipe upstream / downstream of the analyzer. We believe that the disadvantages (places where the analyzer is not quite up to CEMS standards) are far outweighed by the advantages of using a real time instrument, rather than a periodic Reich test, to measure the converter inlet concentration. Rhodia will use best professional judgment to ensure the analyzer located at the converter inlet provides representative data.

Except as noted in this document, the objective of this proposed AMP is to maintain the process analyzer at the converter inlet in a manner that is similar to the stack CEMS, as set forth in 40 CFR Part 60, Appendix B and F.

**Definitions**

"CEMS" or "Continuous Emission Monitoring System" shall mean equipment that continuously measures and records the concentration and/or emission rate of a pollutant, in the units specified by the emission limit concerned.

"Long-Term Limit" shall mean a sulfur dioxide (SO<sub>2</sub>) emission limit for a sulfuric acid plant expressed as pounds per ton of 100% sulfuric acid produced ("lbs/ton"), averaged over all Operating Hours in a rolling 365-day period.

"Malfunction" shall mean, consistent with 40 C.F.R. § 60.2, any sudden, infrequent, and not reasonably preventable failure of air pollution control equipment, process equipment, or a process to operate in a normal or usual manner, but shall not include failures that are caused in part by poor maintenance or careless operation.

"Operating Hours" shall mean periods during which sulfur or sulfur-bearing compounds, excluding conventional fossil fuels such as natural gas or fuel oil, are being fed to the furnace.

"Short-Term Limit" shall mean the SO<sub>2</sub> emission limit for each sulfuric acid plant expressed as pounds per ton of 100% sulfuric acid produced ("lbs/ton"), averaged over each rolling 3-hour period. Except for periods of Startup, Shutdown and Malfunction, the Short-Term Limits established under this Consent Decree shall apply at all times.

"Shutdown" shall mean the cessation of operation of a sulfuric acid plant for any reason. Shutdown begins at the time sulfur or sulfur-bearing feeds, excluding conventional fossil fuels such as natural gas or fuel oil, to the furnace ceases.

"Startup" shall mean the 24-hour period at any sulfuric acid plant beginning when the feed of sulfur or sulfur-bearing materials, excluding conventional fossil fuels such as natural gas or fuel oil, to the furnace commences after a main gas blower shutdown.

#### **Pt. 60.84 Emissions Monitoring.**

Compliance with the Long-Term Limit and Short-Term Limit defined by the Consent Decree will be demonstrated using SO<sub>2</sub> analyzers at the converter inlet and exit stack using the following equation. Refer to additional discussion below the equation for specific details related to data input and calculation.

##### Equation 1

$$Xe = (M1 - M2)/(M1 - 1.5 \times M1 \times M2)$$

$$E = (K / Xe) - K$$

Where:

- Xe = fractional conversion efficiency
- M1 = fractional concentration of SO<sub>2</sub> entering the converter
- M2 = fractional concentration of SO<sub>2</sub> at the stack
- E = SO<sub>2</sub> emission rate in lb / ton of 100 % acid produced
- K = 1306 = (2000 lb / ton) x (64 lb / lbmol SO<sub>2</sub>)/(98 lb / lbmol H<sub>2</sub>SO<sub>4</sub>)

##### Short-Term Limit

The following procedure and calculation will be performed once every five minutes during all Operating Hours, except periods of Startup, Shutdown or Malfunction, to demonstrate compliance with the Short-Term Limit for SO<sub>2</sub>.

- At any given time the system will maintain an array consisting of the 36 most recent samples of the SO<sub>2</sub> concentrations at the converter inlet and at the exit stack.
- Once every five minutes, the system will sample the latest SO<sub>2</sub> concentrations, add the recent readings to the array and delete the oldest readings. If the unit is not operating then the array of data will not change.
- M1<sub>3hravg</sub> will then be calculated as the arithmetic average of the 36 most recent data samples for the fractional concentration of SO<sub>2</sub> entering the converter (M1<sub>3hravg</sub>).
- M2<sub>3hravg</sub> will then be calculated as the arithmetic average of the 36 most recent data samples for the fractional concentration of SO<sub>2</sub> at the stack (M2<sub>3hravg</sub>).
- The rolling 3 hour average SO<sub>2</sub> emissions (E<sub>3hravg</sub>) will then be calculated per Equation 2.

##### Equation 2 (rolling 3 hour average SO<sub>2</sub> emissions)

$$Xe_{3hravg} = (M1_{3hravg} - M2_{3hravg}) / (M1_{3hravg} - 1.5 \times M1_{3hravg} \times M2_{3hravg})$$

$$E_{3hravg} = (K / Xe_{3hravg}) - K$$

- The production unit will be deemed to be operating in compliance with the Short Term Limit if E<sub>3hr-avg</sub> does not exceed 3.0 lb of SO<sub>2</sub> per ton of 100% sulfuric acid produced during all Operating Hours except periods of Startup, Shutdown or Malfunction.

During routine calibration checks and adjustments of the SO<sub>2</sub> monitors, the SO<sub>2</sub> measurement will be "frozen" at its pre-calibration level. Refer to System Maintenance and Malfunction for guidance during CEMS malfunctions, breakdowns, and repairs.

### Long-Term Limit

The following method will be used to calculate the daily average lb of SO<sub>2</sub> per ton of 100% sulfuric acid, and the number of Operating Hours for the calendar day.

- Once every five minutes during all Operating Hours, the SO<sub>2</sub> concentrations (converter inlet and exit stack) will be sampled and this time will be counted as five operating minutes. If the unit is not operating, then the SO<sub>2</sub> concentrations will not be sampled.
- The daily average will be calculated as follows for each calendar day:
  - o M1<sub>daily avg</sub> will be calculated as the arithmetic average of the sample population for the fractional concentration of SO<sub>2</sub> entering the converter.
  - o M2<sub>daily avg</sub> will be calculated as the arithmetic average of the sample population for the fractional concentration of SO<sub>2</sub> at the stack
  - o E<sub>(daily avg)</sub> will then be calculated using Equation 3.

Equation 3 (daily average SO<sub>2</sub> emissions)

$$Xe_{\text{daily avg}} = (M1_{\text{daily avg}} - M2_{\text{daily avg}}) / (M1_{\text{daily avg}} - 1.5 \times M1_{\text{daily avg}} \times M2_{\text{daily avg}})$$

$$E_{\text{daily avg}} = (K / Xe_{\text{daily avg}}) - K$$

- o The number of operating minutes for the day will be summed (T<sub>day</sub> )
- o E<sub>dayavg</sub> and T<sub>day</sub> will be used to calculate a 365-day rolling average of lb/ton. The daily averages will be weighted by the number of operating minutes per day, as per Equation 4.

Once the system has been in operation for 365 days, compliance with the Long Term Limit (365-day rolling average) SO<sub>2</sub> emission rate will be calculated using Equation 4.

Equation 4

$$E_{365\text{avg}} = \frac{\sum [E_{\text{dayavg}} * T_{\text{day}}]}{\sum T_{\text{day}}}$$

The production unit will be deemed to be operating in compliance with the Long-Term Limit if E<sub>365avg</sub> does not exceed 1.9 lb of SO<sub>2</sub> per ton of 100% sulfuric acid produced during all Operating Hours

During routine calibration checks and adjustments of the SO<sub>2</sub> monitors, the SO<sub>2</sub> measurement will be "frozen" at its pre-calibration level. Refer to System Maintenance and Malfunction for guidance during CEMS malfunction, breakdowns, and repairs:

### **Pt. 60.84 Emissions Monitoring Pt. 60, App. B, Spec. 2, Section 6.0 (Stack and Converter Inlet Analyzers)**

Rhodia proposes to use the following stack analyzer specifications to satisfy the requirements of Pt. 60.84 and Pt. 60, App. B, Spec. 2, Section 6.0. The stack analyzer span must be capable of accommodating elevated emissions during startup. Specifications for the analyzer located at the converter inlet are based on Rhodia's experience with process analyzers at these locations.

An equivalent analyzer may be substituted for any reason.

Location	Manufacturer	Model Number	Range
Stack	Ametek Photometric Analyzer (or equivalent)	460 (or equivalent)	Dual range: Normal: 0 – 500 ppm SO <sub>2</sub> SSM: 0 – 3,600 ppm SO <sub>2</sub>
Converter Inlet	Ametek Photometric Analyzer (or equivalent)	920 or IPS-4 (or equivalent)	Single range: 0 – 15 % SO <sub>2</sub>

**Pt. 60, App. B, Spec. 2, Section 1.0 (Stack and Converter Inlet Analyzers)**

Initial compliance certification required only if the analyzer is replaced or if system modifications require one to be performed. Additional detail and exceptions noted below under System Modifications below.

**Pt. 60, App. B, Spec. 2, Section 8.0 (Converter Inlet Analyzer)**

Rhodia will select the optimum location to obtain representative SO<sub>2</sub> readings from this location. Turbulence near the blower exit and elevated temperature at the converter inlet may require an analyzer measurement location that differs from the requirements of this section (e.g. pollutant stratification). A pollutant stratification test is not warranted for this application because (a) process conditions make it extremely unlikely that stratification could occur, and (b) the samples obtained under this monitoring plan are the same as would be obtained under the NSPS, except that the instrument will typically take 288 samples per day rather than the 3 required by the NSPS. Therefore, no new stratification risk is introduced by this method, but the instrument will typically take about 100 times as many samples.

**Pt. 60, App. B, Spec. 2, Section 16.0 (Converter Inlet Analyzer)**

Rhodia will use the Alternative Relative Accuracy Procedure provided in Section 16.2.1 (i.e. conduct a cylinder gas audit).

**Pt. 60, App. F, Spec. 2, Section 5.0 (Converter Inlet Analyzer)**

Rhodia will use quarterly cylinder gas audits (i.e. four per year) to satisfy the requirements of this section.

**System Maintenance and Malfunction**

Except for monitoring malfunctions, associated repairs, and required quality assurance or control activities (including calibration checks and required zero and span adjustments), the plant shall conduct monitoring in continuous operation during all Operating Hours as defined above

In the event of a CEMS malfunction of greater than 24 hours:

- Exit stack gas will be sampled and analyzed at least once per hour, during all Operating Hours.. Sampling will be conducted by Reich test or other method (e.g. portable analyzer).
- Converter inlet gas will either be sampled, or estimated using engineering judgment, at least once every four hours during all Operating Hours.
- Compliance with the Short-Term Limit and Long-Term Limit shall be verified by using these data and Equations 2, 3, and 4 with the following exceptions. If the stack CEMS is out of service, the most recent hourly reading will be substituted for the 12 five-minute readings that would otherwise be taken if the system was operating normally. Similarly, if the converter inlet SO<sub>2</sub> analyzer is out of service, the most recent four-hour reading will be substituted for the 48 five-minute readings that would otherwise be taken if the system was operating normally.

In the event of an analyzer malfunction, a like-kind replacement may be used while repairs are being made. A cylinder gas audit (CGA) must be performed on the replacement analyzer as soon as is practicable after it is placed in service. The daily calibration drift requirement would also apply to the replacement analyzer.

### **System Modifications**

Significant replacement, modification, or change in certified CEMS equipment may require a complete recertification. If a recertification is required, it will be conducted within 90 days. Examples include:

- Change in location or orientation of the sampling probe or site
- Complete replacement of an existing continuous emission monitoring system.

When replacing components that can alter the physical characteristics or conditioning of the sample in the field, a CGA is required. The following activities will require a CGA to be performed before returning the analyzer to service.

- Replacement of the analyzer
- Detector replacement
- Replacement of equipment associated with the detector

The following activities are not expected to trigger a CGA. However, it is recommended that a Calibration Drift check be performed before returning to service.

- Filter replacement
- Data Recorder Repairs
- Tubing replacement

General guidance: When replacing components or devices that do not affect the physical characteristics or handling of the gas in the field such as data recorders, a CGA is not required. A calibration drift check normally should be conducted. If the repaired component affects the transport of the gas to the analyzer, such as replacing tubing, a leak check should be conducted.

### **Alternative Monitoring System**

The monitoring system proposed in this Alternative Monitoring Plan is expected to be a significant improvement over the monitoring requirements contained in the NSPS for sulfuric acid plants. However, the real-time calculation of SO<sub>2</sub> emissions is dependent upon the use of an SO<sub>2</sub> analyzer in the inlet duct to the converter, and the maintenance of that analyzer to approximately the same performance standards normally applied to the stack SO<sub>2</sub> CEMS. This is an unproven application of this technology, and there is some risk that the converter inlet SO<sub>2</sub> analyzer will not be able to perform as required despite the best efforts of Rhodia and the instrument manufacturer.

If Rhodia and the instrument manufacturer are unable to make the system operate to the indicated standards because the converter inlet SO<sub>2</sub> analyzer is unreliable and / or inaccurate in this application, then Rhodia will promptly notify EPA Region 6, and LDEQ of its determination and proceed as follows:

- Rhodia will immediately begin meeting its SO<sub>2</sub> emissions monitoring requirements in accordance with 40 CFR Part 60, Subpart H, except that the SO<sub>2</sub> concentration at the converter inlet will be analyzed six times per day rather than the three times per day specified in the regulations.
- Rhodia will provide whatever information is requested by EPA regarding the determination that the converter inlet SO<sub>2</sub> analyzer can not meet the necessary performance standards.
- Rhodia will work with EPA to determine whether real time measurement of SO<sub>2</sub> emissions (in lbs / ton of acid) can be readily accomplished through other means without the use of an SO<sub>2</sub> analyzer at the converter inlet.

**Alternative Monitoring Plan for SO<sub>2</sub> Emissions  
Rhodia Inc. Baton Rouge, LA, Unit 2  
Hybrid Single Absorption Sulfuric Acid Regeneration Plant with Scrubber**

**Justification for Using an Alternative Monitoring Plan (AMP) for SO<sub>2</sub> emissions**

The regulations that established the NSPS for sulfuric acid plants are over 30 years old. At the time, the regulatory standard was established as 4 lb of SO<sub>2</sub> emissions per ton of 100 % sulfuric acid produced, and compliance with the standard was to be demonstrated using a calculation similar to Equation 1 below. Regulations required the use of a CEMS to measure SO<sub>2</sub> concentration at the stack (M2), but only required measurement of SO<sub>2</sub> entering the converter by suitable method three times per calendar day. Plants typically rely on the use of a Reich test once per shift to establish the SO<sub>2</sub> concentration entering the converter (M1). While the stack measurement represented a nearly continuous real time indication of the stack concentration, performing a Reich test once per shift for the converter inlet concentration provides little more than a random sample once every eight hours.

The methodology proposed in this AMP will provide a more continuous real-time indication of compliance by using a process analyzer to measure the converter inlet SO<sub>2</sub> concentration. While this analyzer will be nearly identical to the CEMS that is commonly used at the stack, it will not be able to meet all of the standards that are usually applied to a CEMS because of the process conditions and / or physical limitations of an existing facility. For example, it is not feasible to modify the existing ductwork around the analyzer to meet the normal guidelines for straight runs of pipe upstream / downstream of the analyzer. We believe that the disadvantages (places where the analyzer is not quite up to CEMS standards) are far outweighed by the advantages of using a real time instrument, rather than a periodic Reich test, to measure the converter inlet concentration. Rhodia will use best professional judgment to ensure the analyzer located at the converter inlet provides representative data.

Except as noted in this document, the objective of this proposed AMP is to maintain the process analyzer at the converter inlet in a manner that is similar to the stack CEMS, as set forth in 40 CFR Part 60, Appendix B and F.

**Definitions**

"CEMS" or "Continuous Emission Monitoring System" shall mean equipment that continuously measures and records the concentration and/or emission rate of a pollutant, in the units specified by the emission limit concerned.

"Long-Term Limit" shall mean a sulfur dioxide (SO<sub>2</sub>) emission limit for a sulfuric acid plant expressed as pounds per ton of 100% sulfuric acid produced ("lbs/ton"), averaged over all Operating Hours in a rolling 365-day period.

"Malfunction" shall mean, consistent with 40 C.F.R. § 60.2, any sudden, infrequent, and not reasonably preventable failure of air pollution control equipment, process equipment, or a process to operate in a normal or usual manner, but shall not include failures that are caused in part by poor maintenance or careless operation.

"Operating Hours" shall mean periods during which sulfur or sulfur-bearing compounds, excluding conventional fossil fuels such as natural gas or fuel oil, are being fed to the furnace.

"Short-Term Limit" shall mean the SO<sub>2</sub> emission limit for each sulfuric acid plant expressed as pounds per ton of 100% sulfuric acid produced ("lbs/ton"), averaged over each rolling 3-hour period. Except for periods of Startup, Shutdown and Malfunction, the Short-Term Limits established under this Consent Decree shall apply at all times.

"Shutdown" shall mean the cessation of operation of a sulfuric acid plant for any reason. Shutdown begins at the time sulfur or sulfur-bearing feeds, excluding conventional fossil fuels such as natural gas or fuel oil, to the furnace ceases

"Startup" shall mean the 24-hour period at any sulfuric acid plant beginning when the feed of sulfur or sulfur-bearing materials, excluding conventional fossil fuels such as natural gas or fuel oil, to the furnace commences after a main gas blower shutdown.

#### **Pt. 60.84 Emissions Monitoring.**

Compliance with the Long-Term Limit and Short-Term Limit defined by the Consent Decree will be demonstrated using SO<sub>2</sub> analyzers at the converter inlet and exit stack using the following equation. Refer to additional discussion below the equation for specific details related to data input and calculation.

##### Equation 1

$$Xe = (M1 - M2)/(M1 - 1.5 \times M1 \times M2)$$

$$E = (K / Xe) - K$$

Where:

- Xe = fractional conversion efficiency
- M1 = fractional concentration of SO<sub>2</sub> entering the converter
- M2 = fractional concentration of SO<sub>2</sub> at the stack
- E = SO<sub>2</sub> emission rate in lb / ton of 100 % acid produced
- K = 1306 = (2000 lb / ton ) x (64 lb / lbmol SO<sub>2</sub>)/(98 lb / lbmol H<sub>2</sub>SO<sub>4</sub>)

##### Short-Term Limit

The following procedure and calculation will be performed once every five minutes during all Operating Hours, except periods of Startup, Shutdown or Malfunction, to demonstrate compliance with the Short-Term Limit for SO<sub>2</sub>.

- At any given time the system will maintain an array consisting of the 36 most recent samples of the SO<sub>2</sub> concentrations at the converter inlet and at the exit stack.
- Once every five minutes, the system will sample the latest SO<sub>2</sub> concentrations, add the recent readings to the array and delete the oldest readings. If the unit is not operating then the array of data will not change.
- M1<sub>3hravg</sub> will then be calculated as the arithmetic average of the 36 most recent data samples for the fractional concentration of SO<sub>2</sub> entering the converter (M1<sub>3hravg</sub>).
- M2<sub>3hravg</sub> will then be calculated as the arithmetic average of the 36 most recent data samples for the fractional concentration of SO<sub>2</sub> at the stack (M2<sub>3hravg</sub>).
- The rolling 3 hour average SO<sub>2</sub> emissions (E<sub>3hravg</sub>) will then be calculated per Equation 2.

##### Equation 2 (rolling 3 hour average SO<sub>2</sub> emissions)

$$Xe_{3hravg} = (M1_{3hravg} - M2_{3hravg})/(M1_{3hravg} - 1.5 \times M1_{3hravg} \times M2_{3hravg})$$

$$E_{3hravg} = (K / Xe_{3hravg}) - K$$

- The production unit will be deemed to be operating in compliance with the Short Term Limit if E<sub>3hr-avg</sub> does not exceed 3.0 lb of SO<sub>2</sub> per ton of 100% sulfuric acid produced during all Operating Hours except periods of Startup, Shutdown or Malfunction.

During routine calibration checks and adjustments of the SO<sub>2</sub> monitors, the SO<sub>2</sub> measurement will be "frozen" at its pre-calibration level. Refer to System Maintenance and Malfunction for guidance during CEMS malfunctions, breakdowns, and repairs.

### Long-Term Limit

The following method will be used to calculate the daily average lb of SO<sub>2</sub> per ton of 100% sulfuric acid, and the number of Operating Hours for the calendar day.

- Once every five minutes during all Operating Hours, the SO<sub>2</sub> concentrations (converter inlet and exit stack) will be sampled and this time will be counted as five operating minutes. If the unit is not operating, then the SO<sub>2</sub> concentrations will not be sampled.
- The daily average will be calculated as follows for each calendar day:
  - o M1<sub>daily avg</sub> will be calculated as the arithmetic average of the sample population for the fractional concentration of SO<sub>2</sub> entering the converter.
  - o M2<sub>daily avg</sub> will be calculated as the arithmetic average of the sample population for the fractional concentration of SO<sub>2</sub> at the stack
  - o E<sub>(daily avg)</sub> will then be calculated using Equation 3.

#### Equation 3 (daily average SO<sub>2</sub> emissions)

$$Xe_{\text{daily avg}} = (M1_{\text{daily avg}} - M2_{\text{daily avg}}) / (M1_{\text{daily avg}} - 1.5 \times M1_{\text{daily avg}} \times M2_{\text{daily avg}})$$

$$E_{\text{daily avg}} = (K / Xe_{\text{daily avg}}) - K$$

- o The number of operating minutes for the day will be summed (T<sub>day</sub> )
- o E<sub>dayavg</sub> and T<sub>day</sub> will be used to calculate a 365-day rolling average of lb/ton. The daily averages will be weighted by the number of operating minutes per day, as per Equation 4.

Once the system has been in operation for 365 days, compliance with the Long Term Limit (365-day rolling average) SO<sub>2</sub> emission rate will be calculated using Equation 4.

#### Equation 4

$$E_{365\text{avg}} = \frac{\sum [E_{\text{dayavg}} * T_{\text{day}}]}{\sum T_{\text{day}}}$$

The production unit will be deemed to be operating in compliance with the Long-Term Limit if E<sub>365avg</sub> does not exceed 2.2 lb of SO<sub>2</sub> per ton of 100% sulfuric acid produced during all Operating Hours

During routine calibration checks and adjustments of the SO<sub>2</sub> monitors, the SO<sub>2</sub> measurement will be "frozen" at its pre-calibration level. Refer to System Maintenance and Malfunction for guidance during CEMS malfunction, breakdowns, and repairs:

### **Pt. 60.84 Emissions Monitoring Pt. 60, App. B, Spec. 2, Section 6.0 (Stack and Converter Inlet Analyzers)**

Rhodia proposes to use the following stack analyzer specifications to satisfy the requirements of Pt. 60.84 and Pt. 60, App. B, Spec. 2, Section 6.0. The stack analyzer span must be capable of accommodating elevated emissions during startup. Specifications for the analyzer located at the converter inlet are based on Rhodia's experience with process analyzers at these locations.

An equivalent analyzer may be substituted for any reason.

Location	Manufacturer	Model Number	Range
Stack	Ametek Photometric Analyzer (or equivalent)	460 (or equivalent)	Dual range: Normal: 0 – 500 ppm SO <sub>2</sub> SSM: 0 – 3,600 ppm SO <sub>2</sub>
Converter Inlet	Ametek Photometric Analyzer (or equivalent)	920 or IPS-4 (or equivalent)	Single range: 0 – 15 % SO <sub>2</sub>

**Pt. 60, App. B, Spec. 2, Section 1.0 (Stack and Converter Inlet Analyzers)**

Initial compliance certification required only if the analyzer is replaced or if system modifications require one to be performed. Additional detail and exceptions noted below under System Modifications below.

**Pt. 60, App. B, Spec. 2, Section 8.0 (Converter Inlet Analyzer)**

Rhodia will select the optimum location to obtain representative SO<sub>2</sub> readings from this location. Process conditions and / or configuration may require an analyzer measurement location that differs from the requirements of this section (e.g. pollutant stratification). A pollutant stratification test is not warranted for this application because (a) process conditions make it extremely unlikely that stratification could occur, and (b) the samples obtained under this monitoring plan are the same as would be obtained under the NSPS, except that the instrument will typically take 288 samples per day rather than the 3 required by the NSPS. Therefore, no new stratification risk is introduced by this method, but the instrument will typically take about 100 times as many samples.

**Pt. 60, App. B, Spec. 2, Section 16.0 (Converter Inlet Analyzer)**

Rhodia will use the Alternative Relative Accuracy Procedure provided in Section 16.2.1 (i.e. conduct a cylinder gas audit).

**Pt. 60, App. F, Spec. 2, Section 5.0 (Converter Inlet Analyzer)**

Rhodia will use quarterly cylinder gas audits (i.e. four per year) to satisfy the requirements of this section.

**System Maintenance and Malfunction**

Except for monitoring malfunctions, associated repairs, and required quality assurance or control activities (including calibration checks and required zero and span adjustments), the plant shall conduct monitoring in continuous operation during all Operating Hours as defined above

In the event of a CEMS malfunction of greater than 24 hours:

- Exit stack gas will be sampled and analyzed at least once per hour, during all Operating Hours.. Sampling will be conducted by Reich test or other method (e.g. portable analyzer).
- Converter inlet gas will either be sampled, or estimated using engineering judgment, at least once every four hours during all Operating Hours.
- Compliance with the Short-Term Limit and Long-Term Limit shall be verified by using these data and Equations 2, 3, and 4 with the following exceptions. If the stack CEMS is out of service, the most recent hourly reading will be substituted for the 12 five-minute readings that would otherwise be taken if the system was operating normally. Similarly, if the converter inlet SO<sub>2</sub> analyzer is out of service, the most recent four-hour reading will be substituted for the 48 five-minute readings that would otherwise be taken if the system was operating normally.

In the event of an analyzer malfunction, a like-kind replacement may be used while repairs are being made. A cylinder gas audit (CGA) must be performed on the replacement analyzer as soon as is practicable after it is placed in service. The daily calibration drift requirement would also apply to the replacement analyzer.

### **System Modifications**

Significant replacement, modification, or change in certified CEMS equipment may require a complete recertification. If a recertification is required, it will be conducted within 90 days. Examples include:

- Change in location or orientation of the sampling probe or site
- Complete replacement of an existing continuous emission monitoring system.

When replacing components that can alter the physical characteristics or conditioning of the sample in the field, a CGA is required. The following activities will require a CGA to be performed before returning the analyzer to service.

- Replacement of the analyzer
- Detector replacement
- Replacement of equipment associated with the detector

The following activities are not expected to trigger a CGA. However, it is recommended that a Calibration Drift check be performed before returning to service.

- Filter replacement
- Data Recorder Repairs
- Tubing replacement

General guidance: When replacing components or devices that do not affect the physical characteristics or handling of the gas in the field such as data recorders, a CGA is not required. A calibration drift check normally should be conducted. If the repaired component affects the transport of the gas to the analyzer, such as replacing tubing, a leak check should be conducted.

### **Alternative Monitoring System**

The monitoring system proposed in this Alternative Monitoring Plan is expected to be a significant improvement over the monitoring requirements contained in the NSPS for sulfuric acid plants. However, the real-time calculation of SO<sub>2</sub> emissions is dependent upon the use of an SO<sub>2</sub> analyzer in the inlet duct to the converter, and the maintenance of that analyzer to approximately the same performance standards normally applied to the stack SO<sub>2</sub> CEMS. This is an unproven application of this technology, and there is some risk that the converter inlet SO<sub>2</sub> analyzer will not be able to perform as required despite the best efforts of Rhodia and the instrument manufacturer.

If Rhodia and the instrument manufacturer are unable to make the system operate to the indicated standards because the converter inlet SO<sub>2</sub> analyzer is unreliable and / or inaccurate in this application, then Rhodia will promptly notify EPA Region 6, and LDEQ of its determination and proceed as follows:

- Rhodia will immediately begin meeting its SO<sub>2</sub> emissions monitoring requirements in accordance with 40 CFR Part 60, Subpart H, except that the SO<sub>2</sub> concentration at the converter inlet will be analyzed six times per day rather than the three times per day specified in the regulations.
- Rhodia will provide whatever information is requested by EPA regarding the determination that the converter inlet SO<sub>2</sub> analyzer can not meet the necessary performance standards.
- Rhodia will work with EPA to determine whether real time measurement of SO<sub>2</sub> emissions (in lbs / ton of acid) can be readily accomplished through other means without the use of an SO<sub>2</sub> analyzer at the converter inlet.

**Alternative Monitoring Plan for SO<sub>2</sub> Emissions  
Rhodia Inc. Baytown, Texas  
Single Absorption Sulfuric Acid Regeneration Plant with Scrubber**

**Justification for Using an Alternative Monitoring Plan (AMP) for SO<sub>2</sub> emissions**

The regulations that established the NSPS for sulfuric acid plants are over 30 years old. At the time, the regulatory standard was established as 4 lb of SO<sub>2</sub> emissions per ton of 100 % sulfuric acid produced, and compliance with the standard was to be demonstrated using a calculation similar to Equation 1 below. Regulations required the use of a CEMS to measure SO<sub>2</sub> concentration at the stack (M2), but only required measurement of SO<sub>2</sub> entering the converter by suitable method three times per calendar day. Plants typically rely on the use of a Reich test once per shift to establish the SO<sub>2</sub> concentration entering the converter (M1). While the stack measurement represented a nearly continuous real time indication of the stack concentration, performing a Reich test once per shift for the converter inlet concentration provides little more than a random sample once every eight hours.

The methodology proposed in this AMP will provide a more continuous real-time indication of compliance by using a process analyzer to measure the converter inlet SO<sub>2</sub> concentration. While this analyzer will be nearly identical to the CEMS that is commonly used at the stack, it will not be able to meet all of the standards that are usually applied to a CEMS because of the process conditions and / or physical limitations of an existing facility. For example, it is not feasible to modify the existing ductwork around the analyzer to meet the normal guidelines for straight runs of pipe upstream / downstream of the analyzer. We believe that the disadvantages (places where the analyzer is not quite up to CEMS standards) are far outweighed by the advantages of using a real time instrument, rather than a periodic Reich test, to measure the converter inlet concentration. Rhodia will use best professional judgment to ensure the analyzer located at the converter inlet provides representative data.

Except as noted in this document, the objective of this proposed AMP is to maintain the process analyzer at the converter inlet in a manner that is similar to the stack CEMS, as set forth in 40 CFR Part 60, Appendix B and F.

**Definitions**

"CEMS" or "Continuous Emission Monitoring System" shall mean equipment that continuously measures and records the concentration and/or emission rate of a pollutant, in the units specified by the emission limit concerned.

"Long-Term Limit" shall mean a sulfur dioxide (SO<sub>2</sub>) emission limit for a sulfuric acid plant expressed as pounds per ton of 100% sulfuric acid produced ("lbs/ton"), averaged over all Operating Hours in a rolling 365-day period.

"Malfunction" shall mean, consistent with 40 C.F.R. § 60.2, any sudden, infrequent, and not reasonably preventable failure of air pollution control equipment, process equipment, or a process to operate in a normal or usual manner, but shall not include failures that are caused in part by poor maintenance or careless operation.

"Operating Hours" shall mean periods during which sulfur or sulfur-bearing compounds, excluding conventional fossil fuels such as natural gas or fuel oil, are being fed to the furnace.

"Short-Term Limit" shall mean the SO<sub>2</sub> emission limit for each sulfuric acid plant expressed as pounds per ton of 100% sulfuric acid produced ("lbs/ton"), averaged over each rolling 3-hour period. Except for periods of Startup, Shutdown and Malfunction, the Short-Term Limits established under this Consent Decree shall apply at all times.

"Shutdown" shall mean the cessation of operation of a sulfuric acid plant for any reason. Shutdown begins at the time sulfur or sulfur-bearing feeds, excluding conventional fossil fuels such as natural gas or fuel oil, to the furnace ceases.

"Startup" shall mean the 24-hour period at any sulfuric acid plant beginning when the feed of sulfur or sulfur-bearing materials, excluding conventional fossil fuels such as natural gas or fuel oil, to the furnace commences after a main gas blower shutdown.

#### **Pt. 60.84 Emissions Monitoring.**

Compliance with the Long-Term Limit and Short-Term Limit defined by the Consent Decree will be demonstrated using SO<sub>2</sub> analyzers at the converter inlet and exit stack using the following equation. Refer to additional discussion below the equation for specific details related to data input and calculation.

##### Equation 1

$$Xe = (M1 - M2)/(M1 - 1.5 \times M1 \times M2)$$

$$E = (K / Xe) - K$$

Where:

- Xe = fractional conversion efficiency
- M1 = fractional concentration of SO<sub>2</sub> entering the converter
- M2 = fractional concentration of SO<sub>2</sub> at the stack
- E = SO<sub>2</sub> emission rate in lb / ton of 100 % acid produced
- K = 1306 = (2000 lb / ton ) x (64 lb / lbmol SO<sub>2</sub>)/(98 lb / lbmol H<sub>2</sub>SO<sub>4</sub>)

##### Short-Term Limit

The following procedure and calculation will be performed once every five minutes during all Operating Hours, except periods of Startup, Shutdown or Malfunction, to demonstrate compliance with the Short-Term Limit for SO<sub>2</sub>.

- At any given time the system will maintain an array consisting of the 36 most recent samples of the SO<sub>2</sub> concentrations at the converter inlet and at the exit stack.
- Once every five minutes, the system will sample the latest SO<sub>2</sub> concentrations, add the recent readings to the array and delete the oldest readings. If the unit is not operating then the array of data will not change.
- M1<sub>3hravg</sub> will then be calculated as the arithmetic average of the 36 most recent data samples for the fractional concentration of SO<sub>2</sub> entering the converter (M1<sub>3hravg</sub>).
- M2<sub>3hravg</sub> will then be calculated as the arithmetic average of the 36 most recent data samples for the fractional concentration of SO<sub>2</sub> at the stack (M2<sub>3hravg</sub>).
- The rolling 3 hour average SO<sub>2</sub> emissions (E<sub>3hravg</sub>) will then be calculated per Equation 2.

##### Equation 2 (rolling 3 hour average SO<sub>2</sub> emissions)

$$Xe_{3hravg} = (M1_{3hravg} - M2_{3hravg}) / (M1_{3hravg} - 1.5 \times M1_{3hravg} \times M2_{3hravg})$$

$$E_{3hravg} = (K / Xe_{3hravg}) - K$$

- The production unit will be deemed to be operating in compliance with the Short Term Limit if E<sub>3hr-avg</sub> does not exceed 3.0 lb of SO<sub>2</sub> per ton of 100% sulfuric acid produced during all Operating Hours except periods of Startup, Shutdown or Malfunction.

During routine calibration checks and adjustments of the SO<sub>2</sub> monitors, the SO<sub>2</sub> measurement will be "frozen" at its pre-calibration level. Refer to System Maintenance and Malfunction for guidance during CEMS malfunctions, breakdowns, and repairs.

### Long-Term Limit

The following method will be used to calculate the daily average lb of SO<sub>2</sub> per ton of 100% sulfuric acid, and the number of Operating Hours for the calendar day.

- Once every five minutes during all Operating Hours, the SO<sub>2</sub> concentrations (converter inlet and exit stack) will be sampled and this time will be counted as five operating minutes. If the unit is not operating, then the SO<sub>2</sub> concentrations will not be sampled.
- The daily average will be calculated as follows for each calendar day:
  - o M1<sub>daily avg</sub> will be calculated as the arithmetic average of the sample population for the fractional concentration of SO<sub>2</sub> entering the converter.
  - o M2<sub>daily avg</sub> will be calculated as the arithmetic average of the sample population for the fractional concentration of SO<sub>2</sub> at the stack
  - o E<sub>(daily avg)</sub> will then be calculated using Equation 3.

Equation 3 (daily average SO<sub>2</sub> emissions)

$$X_{e\text{daily avg}} = (M1_{\text{daily avg}} - M2_{\text{daily avg}}) / (M1_{\text{daily avg}} - 1.5 \times M1_{\text{daily avg}} \times M2_{\text{daily avg}})$$
$$E_{\text{daily avg}} = (K / X_{e\text{daily avg}}) - K$$

- o The number of operating minutes for the day will be summed (T<sub>day</sub>.)
- o E<sub>dayavg</sub> and T<sub>day</sub> will be used to calculate a 365-day rolling average of lb/ton. The daily averages will be weighted by the number of operating minutes per day, as per Equation 4.

Once the system has been in operation for 365 days, compliance with the Long Term Limit (365-day rolling average) SO<sub>2</sub> emission rate will be calculated using Equation 4.

Equation 4

$$E_{365\text{avg}} = \frac{\sum [E_{\text{dayavg}} * T_{\text{day}}]}{\sum T_{\text{day}}}$$

The production unit will be deemed to be operating in compliance with the Long-Term Limit if E<sub>365avg</sub> does not exceed 2.2 lb of SO<sub>2</sub> per ton of 100% sulfuric acid produced during all Operating Hours

During routine calibration checks and adjustments of the SO<sub>2</sub> monitors, the SO<sub>2</sub> measurement will be "frozen" at its pre-calibration level. Refer to System Maintenance and Malfunction for guidance during CEMS malfunction, breakdowns, and repairs:

### **Pt. 60.84 Emissions Monitoring Pt. 60, App. B, Spec. 2, Section 6.0 (Stack and Converter Inlet Analyzers)**

Rhodia proposes to use the following stack analyzer specifications to satisfy the requirements of Pt. 60.84 and Pt. 60, App. B, Spec. 2, Section 6.0. The stack analyzer span must be capable of accommodating elevated emissions during startup. Specifications for the analyzer located at the converter inlet are based on Rhodia's experience with process analyzers at these locations.

An equivalent analyzer may be substituted for any reason.

Location	Manufacturer	Model Number	Range
Stack	Ametek Photometric Analyzer (or equivalent)	920 (or equivalent)	Dual range: Normal: 0 – 500 ppm SO <sub>2</sub> SSM: 0 – 3,600 ppm SO <sub>2</sub>
Converter Inlet	Ametek Photometric Analyzer (or equivalent)	920 or IPS-4 (or equivalent)	Single range: 0 – 15 % SO <sub>2</sub>

**Pt. 60, App. B, Spec. 2, Section 1.0 (Stack and Converter Inlet Analyzers)**

Initial compliance certification required only if the analyzer is replaced or if system modifications require one to be performed. Additional detail and exceptions noted below under System Modifications below.

**Pt. 60, App. B, Spec. 2, Section 8.0 (Converter Inlet Analyzer)**

Rhodia will select the optimum location to obtain representative SO<sub>2</sub> readings from this location. Turbulence near the blower exit and elevated temperature at the converter inlet may require an analyzer measurement location that differs from the requirements of this section (e.g. pollutant stratification). A pollutant stratification test is not warranted for this application because (a) process conditions make it extremely unlikely that stratification could occur, and (b) the samples obtained under this monitoring plan are the same as would be obtained under the NSPS, except that the instrument will typically take 288 samples per day rather than the 3 required by the NSPS. Therefore, no new stratification risk is introduced by this method, but the instrument will typically take about 100 times as many samples.

**Pt. 60, App. B, Spec. 2, Section 16.0 (Converter Inlet Analyzer)**

Rhodia will use the Alternative Relative Accuracy Procedure provided in Section 16.2.1 (i.e. conduct a cylinder gas audit).

**Pt. 60, App. F, Spec. 2, Section 5.0 (Converter Inlet Analyzer)**

Rhodia will use quarterly cylinder gas audits (i.e. four per year) to satisfy the requirements of this section.

**System Maintenance and Malfunction**

Except for monitoring malfunctions, associated repairs, and required quality assurance or control activities (including calibration checks and required zero and span adjustments), the plant shall conduct monitoring in continuous operation during all Operating Hours as defined above

In the event of a CEMS malfunction of greater than 24 hours:

- Exit stack gas will be sampled and analyzed at least once per hour, during all Operating Hours.. Sampling will be conducted by Reich test or other method (e.g. portable analyzer).
- Converter inlet gas will either be sampled, or estimated using engineering judgment, at least once every four hours during all Operating Hours.
- Compliance with the Short-Term Limit and Long-Term Limit shall be verified by using these data and Equations 2, 3, and 4 with the following exceptions. If the stack CEMS is out of service, the most recent hourly reading will be substituted for the 12 five-minute readings that would otherwise be taken if the system was operating normally. Similarly, if the converter inlet SO<sub>2</sub> analyzer is out of service, the most recent four-hour reading will be substituted for the 48 five-minute readings that would otherwise be taken if the system was operating normally.

In the event of an analyzer malfunction, a like-kind replacement may be used while repairs are being made. A cylinder gas audit (CGA) must be performed on the replacement analyzer as soon as is practicable after it is placed in service. The daily calibration drift requirement would also apply to the replacement analyzer.

### **System Modifications**

Significant replacement, modification, or change in certified CEMS equipment may require a complete recertification. If a recertification is required, it will be conducted within 90 days. Examples include:

- Change in location or orientation of the sampling probe or site
- Complete replacement of an existing continuous emission monitoring system.

When replacing components that can alter the physical characteristics or conditioning of the sample in the field, a CGA is required. The following activities will require a CGA to be performed before returning the analyzer to service.

- Replacement of the analyzer
- Detector replacement
- Replacement of equipment associated with the detector

The following activities are not expected to trigger a CGA. However, it is recommended that a Calibration Drift check be performed before returning to service.

- Filter replacement
- Data Recorder Repairs
- Tubing replacement

General guidance: When replacing components or devices that do not affect the physical characteristics or handling of the gas in the field such as data recorders, a CGA is not required. A calibration drift check normally should be conducted. If the repaired component affects the transport of the gas to the analyzer, such as replacing tubing, a leak check should be conducted.

### **Alternative Monitoring System**

The monitoring system proposed in this Alternative Monitoring Plan is expected to be a significant improvement over the monitoring requirements contained in the NSPS for sulfuric acid plants. However, the real-time calculation of SO<sub>2</sub> emissions is dependent upon the use of an SO<sub>2</sub> analyzer in the inlet duct to the converter, and the maintenance of that analyzer to approximately the same performance standards normally applied to the stack SO<sub>2</sub> CEMS. This is an unproven application of this technology, and there is some risk that the converter inlet SO<sub>2</sub> analyzer will not be able to perform as required despite the best efforts of Rhodia and the instrument manufacturer.

If Rhodia and the instrument manufacturer are unable to make the system operate to the indicated standards because the converter inlet SO<sub>2</sub> analyzer is unreliable and / or inaccurate in this application, then Rhodia will promptly notify EPA Region 6, and TCEQ of its determination and proceed as follows:

- Rhodia will immediately begin meeting its SO<sub>2</sub> emissions monitoring requirements in accordance with 40 CFR Part 60, Subpart H, except that the SO<sub>2</sub> concentration at the converter inlet will be analyzed six times per day rather than the three times per day specified in the regulations.
- Rhodia will provide whatever information is requested by EPA regarding the determination that the converter inlet SO<sub>2</sub> analyzer can not meet the necessary performance standards.
- Rhodia will work with EPA to determine whether real time measurement of SO<sub>2</sub> emissions (in lbs / ton of acid) can be readily accomplished through other means without the use of an SO<sub>2</sub> analyzer at the converter inlet.

**Alternative Monitoring Plan for SO<sub>2</sub> Emissions  
Rhodia Inc. Dominguez Plant, Long Beach, California  
Sulfuric Acid Regeneration Plant with Double Absorption**

**Justification for Using an Alternative Monitoring Plan (AMP) for SO<sub>2</sub> emissions**

The regulations that established the NSPS for sulfuric acid plants are over 30 years old. At the time, the regulatory standard was established as 4 lb of SO<sub>2</sub> emissions per ton of 100 % sulfuric acid produced, and compliance with the standard was to be demonstrated using a calculation similar to Equation 1 below. Regulations required the use of a CEMS to measure SO<sub>2</sub> concentration at the stack (M2), but only required measurement of SO<sub>2</sub> entering the converter by suitable method three times per calendar day. Plants typically rely on the use of a Reich test once per shift to establish the SO<sub>2</sub> concentration entering the converter (M1). While the stack measurement represented a nearly continuous real time indication of the stack concentration, performing a Reich test once per shift for the converter inlet concentration provides little more than a random sample once every eight hours.

The methodology proposed in this AMP will provide a more continuous real-time indication of compliance by using a process analyzer to measure the converter inlet SO<sub>2</sub> concentration. While this analyzer will be nearly identical to the CEMS that is commonly used at the stack, it will not be able to meet all of the standards that are usually applied to a CEMS because of the process conditions and / or physical limitations of an existing facility. For example, it is not feasible to modify the existing ductwork around the analyzer to meet the normal guidelines for straight runs of pipe upstream / downstream of the analyzer. We believe that the disadvantages (places where the analyzer is not quite up to CEMS standards) are far outweighed by the advantages of using a real time instrument, rather than a periodic Reich test, to measure the converter inlet concentration. Rhodia will use best professional judgment to ensure the analyzer located at the converter inlet provides representative data.

Except as noted in this document, the objective of this proposed AMP is to maintain the process analyzer at the converter inlet in a manner that is similar to the stack CEMS, as set forth in 40 CFR Part 60, Appendix B and F.

**Definitions**

"CEMS" or "Continuous Emission Monitoring System" shall mean equipment that continuously measures and records the concentration and/or emission rate of a pollutant, in the units specified by the emission limit concerned.

"Long-Term Limit" shall mean the annual SO<sub>2</sub> allocation determined by the South Coast Air Quality Management District's Regional Clean Air Incentives Market (RECLAIM), as defined in Regulation XX of the South Coast Air Quality Management District Rules.

"Malfunction" shall mean, consistent with 40 C.F.R. § 60.2, any sudden, infrequent, and not reasonably preventable failure of air pollution control equipment, process equipment, or a process to operate in a normal or usual manner, but shall not include failures that are caused in part by poor maintenance or careless operation.

"Operating Hours" shall mean periods during which sulfur or sulfur-bearing compounds, excluding conventional fossil fuels such as natural gas or fuel oil, are being fed to the furnace.

"Short-Term Limit" shall mean the SO<sub>2</sub> emission limit for each sulfuric acid plant expressed as pounds per ton of 100% sulfuric acid produced ("lbs/ton"), averaged over each rolling 3-hour period. Except for periods of Startup, Shutdown and Malfunction, the Short-Term Limits established under this Consent Decree shall apply at all times.

"Shutdown" shall mean the cessation of operation of a sulfuric acid plant for any reason. Shutdown begins at the time sulfur or sulfur-bearing feeds, excluding conventional fossil fuels such as natural gas or fuel oil, to the furnace ceases

"Startup" shall mean the 24-hour period at any sulfuric acid plant beginning when the feed of sulfur or sulfur-bearing materials, excluding conventional fossil fuels such as natural gas or fuel oil, to the furnace commences after a main gas blower shutdown.

#### **Pt. 60.84 Emissions Monitoring.**

Compliance with the Short-Term Limit defined by the Consent Decree will be demonstrated using SO<sub>2</sub> analyzers at the converter inlet and exit stack using the following equation. Refer to additional discussion below the equation for specific details related to data input and calculation.

##### Equation 1

$$Xe = (M1 - M2)/(M1 - 1.5 \times M1 \times M2)$$

$$E = (K / Xe) - K$$

Where:

- Xe = fractional conversion efficiency
- M1 = fractional concentration of SO<sub>2</sub> entering the converter
- M2 = fractional concentration of SO<sub>2</sub> at the stack
- E = SO<sub>2</sub> emission rate in lb / ton of 100 % acid produced
- K = 1306 = (2000 lb / ton ) x (64 lb / lbmol SO<sub>2</sub>)/(98 lb / lbmol H<sub>2</sub>SO<sub>4</sub>)

##### Short-Term Limit

The following procedure and calculation will be performed once every five minutes during all Operating Hours, except periods of Startup, Shutdown or Malfunction, to demonstrate compliance with the Short-Term Limit for SO<sub>2</sub>.

- At any given time the system will maintain an array consisting of the 36 most recent samples of the SO<sub>2</sub> concentrations at the converter inlet and at the exit stack.
- Once every five minutes, the system will sample the latest SO<sub>2</sub> concentrations, add the recent readings to the array and delete the oldest readings. If the unit is not operating then the array of data will not change.
- M1<sub>3hravg</sub> will then be calculated as the arithmetic average of the 36 most recent data samples for the fractional concentration of SO<sub>2</sub> entering the converter (M1<sub>3hravg</sub>).
- M2<sub>3hravg</sub> will then be calculated as the arithmetic average of the 36 most recent data samples for the fractional concentration of SO<sub>2</sub> at the stack (M2<sub>3hravg</sub>).
- The rolling 3 hour average SO<sub>2</sub> emissions (E<sub>3hravg</sub>) will then be calculated per Equation 2.

##### Equation 2 (rolling 3 hour average SO<sub>2</sub> emissions)

$$Xe_{3hravg} = (M1_{3hravg} - M2_{3hravg}) / (M1_{3hravg} - 1.5 \times M1_{3hravg} \times M2_{3hravg})$$

$$E_{3hravg} = (K / Xe_{3hravg}) - K$$

- The production unit will be deemed to be operating in compliance with the Short Term Limit if E<sub>3hr-avg</sub> does not exceed 3.5 lb of SO<sub>2</sub> per ton of 100% sulfuric acid produced during all Operating Hours except periods of Startup, Shutdown or Malfunction.

During routine calibration checks and adjustments of the SO<sub>2</sub> monitors, the SO<sub>2</sub> measurement will be "frozen" at its pre-calibration level. Refer to System Maintenance and Malfunction for guidance during CEMS malfunctions, breakdowns, and repairs.

### Long-Term Limit

Compliance with the Long Term Limit, which is an annual allocation of SO<sub>2</sub>, shall be done with the existing CEMS that currently complies with South Coast Air Quality Management Districts RECLAIM regulations, as defined in Regulation XX of the South Coast Air Quality Management District Rules.

### **Pt. 60.84 Emissions Monitoring Pt. 60, App. B, Spec. 2, Section 6.0 (Stack and Converter Inlet Analyzers)**

Rhodia proposes to use the following stack analyzer specifications to satisfy the requirements of Pt. 60.84 and Pt. 60, App. B, Spec. 2, Section 6.0. The stack analyzer span must be capable of accommodating elevated emissions during startup. Specifications for the analyzer located at the converter inlet are based on Rhodia's experience with process analyzers at these locations.

An equivalent analyzer may be substituted for any reason.

Location	Manufacturer	Model Number	Range
Stack	Thermo Environmental (or equivalent)	42i (or equivalent)	Dual range: Normal: 0 – 200 ppm SO <sub>2</sub> SSM: 0 – 1,000 ppm SO <sub>2</sub>
Converter Inlet	Thermo Environmental (or equivalent)	42iHL (or equivalent)	Single range: 0 – 12 % SO <sub>2</sub>

### **Pt. 60, App. B, Spec. 2, Section 1.0 (Stack and Converter Inlet Analyzers)**

Initial compliance certification required only if the analyzer is replaced or if system modifications require one to be performed. Additional detail and exceptions noted below under System Modifications below.

### **Pt. 60, App. B, Spec. 2, Section 8.0 (Converter Inlet Analyzer)**

Rhodia will select the optimum location to obtain representative SO<sub>2</sub> readings from this location. Turbulence near the blower exit and elevated temperature at the converter inlet may require an analyzer measurement location that differs from the requirements of this section (e.g. pollutant stratification). The proposed sampling location is in a section of vertical straight duct on the suction side of the main gas blower. A pollutant stratification test is not warranted for this application because (a) process conditions make it extremely unlikely that stratification could occur, and (b) the samples obtained under this monitoring plan are the same as would be obtained under the NSPS, except that the instrument will typically take 288 samples per day rather than the 3 required by the NSPS. Therefore, no new stratification risk is introduced by this method, but the instrument will typically take about 100 times as many samples.

### **Pt. 60, App. B, Spec. 2, Section 16.0 (Converter Inlet Analyzer)**

Rhodia will use the Alternative Relative Accuracy Procedure provided in Section 16.2.1 (i.e. conduct a cylinder gas audit).

### **Pt. 60, App. F, Spec. 2, Section 5.0 (Converter Inlet Analyzer)**

Rhodia will use quarterly cylinder gas audits (i.e. four per year) to satisfy the requirements of this section.

## **System Maintenance and Malfunction**

Except for monitoring malfunctions, associated repairs, and required quality assurance or control activities (including calibration checks and required zero and span adjustments), the plant shall conduct monitoring in continuous operation during all Operating Hours as defined above

In accordance with existing South Coast Air Quality Management District RECLAIM regulations, for every hour of invalid data, missing data must be substituted following the procedures in Rule 2011, Appendix A, Chapter 2, Section E – Missing Data Procedures. The existing stack CEMS complies with these procedures. The blower inlet analyzer system shall also follow these procedures for every hour of invalid data

## **System Modifications**

Significant replacement, modification, or change in certified CEMS equipment may require a complete recertification. If a recertification is required, it will be conducted within 90 days. Examples include:

- Change in location or orientation of the sampling probe or site
- Complete replacement of an existing continuous emission monitoring system.

When replacing components that can alter the physical characteristics or conditioning of the sample in the field, a CGA is required. The following activities will require a CGA to be performed before returning the analyzer to service.

- Replacement of the analyzer
- Detector replacement
- Replacement of equipment associated with the detector

The following activities are not expected to trigger a CGA. However, it is recommended that a Calibration Drift check be performed before returning to service.

- Filter replacement
- Data Recorder Repairs
- Tubing replacement

General guidance: When replacing components or devices that do not affect the physical characteristics or handling of the gas in the field such as data recorders, a CGA is not required. A calibration drift check normally should be conducted. If the repaired component affects the transport of the gas to the analyzer, such as replacing tubing, a leak check should be conducted.

## **Alternative Monitoring System**

The monitoring system proposed in this Alternative Monitoring Plan is expected to be a significant improvement over the monitoring requirements contained in the NSPS for sulfuric acid plants. However, the real-time calculation of SO<sub>2</sub> emissions is dependent upon the use of an SO<sub>2</sub> analyzer in the inlet duct to the converter, and the maintenance of that analyzer to approximately the same performance standards normally applied to the stack SO<sub>2</sub> CEMS. This is an unproven application of this technology, and there is some risk that the converter inlet SO<sub>2</sub> analyzer will not be able to perform as required despite the best efforts of Rhodia and the instrument manufacturer.

If Rhodia and the instrument manufacturer are unable to make the system operate to the indicated standards because the converter inlet SO<sub>2</sub> analyzer is unreliable and / or inaccurate in this application, then Rhodia will promptly notify EPA Region 9, and SCAQMD of its determination and proceed as follows:

- Rhodia will immediately begin meeting its SO<sub>2</sub> emissions monitoring requirements in accordance with 40 CFR Part 60, Subpart H, except that the SO<sub>2</sub> concentration at the converter inlet will be analyzed six times per day rather than the three times per day specified in the regulations.
- Rhodia will provide whatever information is requested by EPA regarding the determination that the converter inlet SO<sub>2</sub> analyzer can not meet the necessary performance standards.
- Rhodia will work with EPA to determine whether real time measurement of SO<sub>2</sub> emissions (in lbs / ton of acid) can be readily accomplished through other means without the use of an SO<sub>2</sub> analyzer at the converter inlet.

**Alternative Monitoring Plan for SO<sub>2</sub> Emissions  
Rhodia Inc. Hammond, Indiana  
Sulfuric Acid Regeneration Plant with Double Absorption**

**Justification for Using an Alternative Monitoring Plan (AMP) for SO<sub>2</sub> emissions**

The regulations that established the NSPS for sulfuric acid plants are over 30 years old. At the time, the regulatory standard was established as 4 lb of SO<sub>2</sub> emissions per ton of 100 % sulfuric acid produced, and compliance with the standard was to be demonstrated using a calculation similar to Equation 1 below. Regulations required the use of a CEMS to measure SO<sub>2</sub> concentration at the stack (M2), but only required measurement of SO<sub>2</sub> entering the converter by suitable method three times per calendar day. Plants typically rely on the use of a Reich test once per shift to establish the SO<sub>2</sub> concentration entering the converter (M1). While the stack measurement represented a nearly continuous real time indication of the stack concentration, performing a Reich test once per shift for the converter inlet concentration provides little more than a random sample once every eight hours.

The methodology proposed in this AMP will provide a more continuous real-time indication of compliance by using a process analyzer to measure the converter inlet SO<sub>2</sub> concentration. While this analyzer will be nearly identical to the CEMS that is commonly used at the stack, it will not be able to meet all of the standards that are usually applied to a CEMS because of the process conditions and / or physical limitations of an existing facility. For example, it is not feasible to modify the existing ductwork around the analyzer to meet the normal guidelines for straight runs of pipe upstream / downstream of the analyzer. We believe that the disadvantages (places where the analyzer is not quite up to CEMS standards) are far outweighed by the advantages of using a real time instrument, rather than a periodic Reich test, to measure the converter inlet concentration. Rhodia will use best professional judgment to ensure the analyzer located at the converter inlet provides representative data.

Except as noted in this document, the objective of this proposed AMP is to maintain the process analyzer at the converter inlet in a manner that is similar to the stack CEMS, as set forth in 40 CFR Part 60, Appendix B and F.

**Definitions**

"CEMS" or "Continuous Emission Monitoring System" shall mean equipment that continuously measures and records the concentration and/or emission rate of a pollutant, in the units specified by the emission limit concerned.

"Long-Term Limit" shall mean a sulfur dioxide (SO<sub>2</sub>) emission limit for a sulfuric acid plant expressed as pounds per ton of 100% sulfuric acid produced ("lbs/ton"), averaged over all Operating Hours in a rolling 365-day period.

"Malfunction" shall mean, consistent with 40 C.F.R. § 60.2, any sudden, infrequent, and not reasonably preventable failure of air pollution control equipment, process equipment, or a process to operate in a normal or usual manner, but shall not include failures that are caused in part by poor maintenance or careless operation.

"Operating Hours" shall mean periods during which sulfur or sulfur-bearing compounds, excluding conventional fossil fuels such as natural gas or fuel oil, are being fed to the furnace.

"Short-Term Limit" shall mean the SO<sub>2</sub> emission limit for each sulfuric acid plant expressed as pounds per ton of 100% sulfuric acid produced ("lbs/ton"), averaged over each rolling 3-hour period. Except for periods of Startup, Shutdown and Malfunction, the Short-Term Limits established under this Consent Decree shall apply at all times.

"Shutdown" shall mean the cessation of operation of a sulfuric acid plant for any reason. Shutdown begins at the time sulfur or sulfur-bearing feeds, excluding conventional fossil fuels such as natural gas or fuel oil, to the furnace ceases.

"Startup" shall mean the 24-hour period at any sulfuric acid plant beginning when the feed of sulfur or sulfur-bearing materials, excluding conventional fossil fuels such as natural gas or fuel oil, to the furnace commences after a main gas blower shutdown.

#### **Pt. 60.84 Emissions Monitoring.**

Compliance with the Long-Term Limit and Short-Term Limit defined by the Consent Decree will be demonstrated using SO<sub>2</sub> analyzers at the converter inlet and exit stack using the following equation. Refer to additional discussion below the equation for specific details related to data input and calculation.

##### Equation 1

$$Xe = (M1 - M2)/(M1 - 1.5 \times M1 \times M2)$$

$$E = (K / Xe) - K$$

Where:

- Xe = fractional conversion efficiency
- M1 = fractional concentration of SO<sub>2</sub> entering the converter
- M2 = fractional concentration of SO<sub>2</sub> at the stack
- E = SO<sub>2</sub> emission rate in lb / ton of 100 % acid produced
- K = 1306 = (2000 lb / ton ) x (64 lb / lbmol SO<sub>2</sub>)/(98 lb / lbmol H<sub>2</sub>SO<sub>4</sub>)

##### Short-Term Limit

The following procedure and calculation will be performed once every five minutes during all Operating Hours, except periods of Startup, Shutdown or Malfunction, to demonstrate compliance with the Short-Term Limit for SO<sub>2</sub>.

- At any given time the system will maintain an array consisting of the 36 most recent samples of the SO<sub>2</sub> concentrations at the converter inlet and at the exit stack.
- Once every five minutes, the system will sample the latest SO<sub>2</sub> concentrations, add the recent readings to the array and delete the oldest readings. If the unit is not operating then the array of data will not change.
- M1<sub>3hravg</sub> will then be calculated as the arithmetic average of the 36 most recent data samples for the fractional concentration of SO<sub>2</sub> entering the converter (M1<sub>3hravg</sub>).
- M2<sub>3hravg</sub> will then be calculated as the arithmetic average of the 36 most recent data samples for the fractional concentration of SO<sub>2</sub> at the stack (M2<sub>3hravg</sub>).
- The rolling 3 hour average SO<sub>2</sub> emissions (E<sub>3hravg</sub>) will then be calculated per Equation 2.

##### Equation 2 (rolling 3 hour average SO<sub>2</sub> emissions)

$$Xe_{3hravg} = (M1_{3hravg} - M2_{3hravg}) / (M1_{3hravg} - 1.5 \times M1_{3hravg} \times M2_{3hravg})$$

$$E_{3hravg} = (K / Xe_{3hravg}) - K$$

- The production unit will be deemed to be operating in compliance with the Short Term Limit if E<sub>3hr-avg</sub> does not exceed 3.5 lb of SO<sub>2</sub> per ton of 100% sulfuric acid produced during all Operating Hours except periods of Startup, Shutdown or Malfunction.

During routine calibration checks and adjustments of the SO<sub>2</sub> monitors, the SO<sub>2</sub> measurement will be "frozen" at its pre-calibration level. Refer to System Maintenance and Malfunction for guidance during CEMS malfunctions, breakdowns, and repairs.

### Long-Term Limit

The following method will be used to calculate the daily average lb of SO<sub>2</sub> per ton of 100% sulfuric acid, and the number of Operating Hours for the calendar day.

- Once every five minutes during all Operating Hours, the SO<sub>2</sub> concentrations (converter inlet and exit stack) will be sampled and this time will be counted as five operating minutes. If the unit is not operating, then the SO<sub>2</sub> concentrations will not be sampled.
- The daily average will be calculated as follows for each calendar day:
  - o M1<sub>daily avg</sub> will be calculated as the arithmetic average of the sample population for the fractional concentration of SO<sub>2</sub> entering the converter.
  - o M2<sub>daily avg</sub> will be calculated as the arithmetic average of the sample population for the fractional concentration of SO<sub>2</sub> at the stack
  - o E<sub>(daily avg)</sub> will then be calculated using Equation 3.

#### Equation 3 (daily average SO<sub>2</sub> emissions)

$$Xe_{\text{daily avg}} = (M1_{\text{daily avg}} - M2_{\text{daily avg}}) / (M1_{\text{daily avg}} - 1.5 \times M1_{\text{daily avg}} \times M2_{\text{daily avg}})$$

$$E_{\text{daily avg}} = (K / Xe_{\text{daily avg}}) - K$$

- o The number of operating minutes for the day will be summed (T<sub>day</sub>.)
- o E<sub>dayavg</sub> and T<sub>day</sub> will be used to calculate a 365-day rolling average of lb/ton. The daily averages will be weighted by the number of operating minutes per day, as per Equation 4.

Once the system has been in operation for 365 days, compliance with the Long Term Limit (365-day rolling average) SO<sub>2</sub> emission rate will be calculated using Equation 4.

#### Equation 4

$$E_{365\text{avg}} = \frac{\sum [E_{\text{dayavg}} * T_{\text{day}}]}{\sum T_{\text{day}}}$$

The production unit will be deemed to be operating in compliance with the Long-Term Limit if E<sub>365avg</sub> does not exceed 2.5 lb of SO<sub>2</sub> per ton of 100% sulfuric acid produced during all Operating Hours

During routine calibration checks and adjustments of the SO<sub>2</sub> monitors, the SO<sub>2</sub> measurement will be "frozen" at its pre-calibration level. Refer to System Maintenance and Malfunction for guidance during CEMS malfunction, breakdowns, and repairs:

### **Pt. 60.84 Emissions Monitoring Pt. 60, App. B, Spec. 2, Section 6.0 (Stack and Converter Inlet Analyzers)**

Rhodia proposes to use the following stack analyzer specifications to satisfy the requirements of Pt. 60.84 and Pt. 60, App. B, Spec. 2, Section 6.0. The stack analyzer span must be capable of accommodating elevated emissions during startup. Specifications for the analyzer located at the converter inlet are based on Rhodia's experience with process analyzers at these locations.

An equivalent analyzer may be substituted for any reason.

Location	Manufacturer	Model Number	Range
Stack	Ametek Photometric Analyzer (or equivalent)	460 (or equivalent)	Dual range: Normal: 0 – 500 ppm SO <sub>2</sub> SSM: 0 – 3,600 ppm SO <sub>2</sub>
Converter Inlet	Ametek Photometric Analyzer (or equivalent)	460 (or equivalent)	Single range: 0 – 15 % SO <sub>2</sub>

**Pt. 60, App. B, Spec. 2, Section 1.0 (Stack and Converter Inlet Analyzers)**

Initial compliance certification required only if the analyzer is replaced or if system modifications require one to be performed. Additional detail and exceptions noted below under System Modifications below.

**Pt. 60, App. B, Spec. 2, Section 8.0 (Converter Inlet Analyzer)**

Rhodia will select the optimum location to obtain representative SO<sub>2</sub> readings from this location. Turbulence near the blower exit and elevated temperature at the converter inlet may require an analyzer measurement location that differs from the requirements of this section (e.g. pollutant stratification). A pollutant stratification test is not warranted for this application because (a) process conditions make it extremely unlikely that stratification could occur, and (b) the samples obtained under this monitoring plan are the same as would be obtained under the NSPS, except that the instrument will typically take 288 samples per day rather than the 3 required by the NSPS. Therefore, no new stratification risk is introduced by this method, but the instrument will typically take about 100 times as many samples.

**Pt. 60, App. B, Spec. 2, Section 16.0 (Converter Inlet Analyzer)**

Rhodia will use the Alternative Relative Accuracy Procedure provided in Section 16.2.1 (i.e. conduct a cylinder gas audit).

**Pt. 60, App. F, Spec. 2, Section 5.0 (Converter Inlet Analyzer)**

Rhodia will use quarterly cylinder gas audits (i.e. four per year) to satisfy the requirements of this section.

**System Maintenance and Malfunction**

Except for monitoring malfunctions, associated repairs, and required quality assurance or control activities (including calibration checks and required zero and span adjustments), the plant shall conduct monitoring in continuous operation during all Operating Hours as defined above

In the event of a CEMS malfunction of greater than 24 hours:

- Exit stack gas will be sampled and analyzed at least once per hour, during all Operating Hours. Sampling will be conducted by Reich test or other method (e.g. portable analyzer).
- Converter inlet gas will either be sampled, or estimated using engineering judgment, at least once every four hours during all Operating Hours.
- Compliance with the Short-Term Limit and Long-Term Limit shall be verified by using these data and Equations 2, 3, and 4 with the following exceptions. If the stack CEMS is out of service, the most recent hourly reading will be substituted for the 12 five-minute readings that would otherwise be taken if the system was operating normally. Similarly, if the converter inlet SO<sub>2</sub> analyzer is out of service, the most recent four-hour reading will be substituted for the 48 five-minute readings that would otherwise be taken if the system was operating normally.

In the event of an analyzer malfunction, a like-kind replacement may be used while repairs are being made. A cylinder gas audit (CGA) must be performed on the replacement analyzer as soon as is practicable after it is placed in service. The daily calibration drift requirement would also apply to the replacement analyzer.

### **System Modifications**

Significant replacement, modification, or change in certified CEMS equipment may require a complete recertification. If a recertification is required, it will be conducted within 90 days. Examples include:

- Change in location or orientation of the sampling probe or site
- Complete replacement of an existing continuous emission monitoring system.

When replacing components that can alter the physical characteristics or conditioning of the sample in the field, a CGA is required. The following activities will require a CGA to be performed before returning the analyzer to service.

- Replacement of the analyzer
- Detector replacement
- Replacement of equipment associated with the detector

The following activities are not expected to trigger a CGA. However, it is recommended that a Calibration Drift check be performed before returning to service.

- Filter replacement
- Data Recorder Repairs
- Tubing replacement

General guidance: When replacing components or devices that do not affect the physical characteristics or handling of the gas in the field such as data recorders, a CGA is not required. A calibration drift check normally should be conducted. If the repaired component affects the transport of the gas to the analyzer, such as replacing tubing, a leak check should be conducted.

### **Alternative Monitoring System**

The monitoring system proposed in this Alternative Monitoring Plan is expected to be a significant improvement over the monitoring requirements contained in the NSPS for sulfuric acid plants. However, the real-time calculation of SO<sub>2</sub> emissions is dependent upon the use of an SO<sub>2</sub> analyzer in the inlet duct to the converter, and the maintenance of that analyzer to approximately the same performance standards normally applied to the stack SO<sub>2</sub> CEMS. This is an unproven application of this technology, and there is some risk that the converter inlet SO<sub>2</sub> analyzer will not be able to perform as required despite the best efforts of Rhodia and the instrument manufacturer.

If Rhodia and the instrument manufacturer are unable to make the system operate to the indicated standards because the converter inlet SO<sub>2</sub> analyzer is unreliable and / or inaccurate in this application, then Rhodia will promptly notify EPA Region 5, IDEM and HDEM of its determination and proceed as follows:

- Rhodia will immediately begin meeting its SO<sub>2</sub> emissions monitoring requirements in accordance with 40 CFR Part 60, Subpart H, except that the SO<sub>2</sub> concentration at the converter inlet will be analyzed six times per day rather than the three times per day specified in the regulations.
- Rhodia will provide whatever information is requested by EPA regarding the determination that the converter inlet SO<sub>2</sub> analyzer can not meet the necessary performance standards.
- Rhodia will work with EPA to determine whether real time measurement of SO<sub>2</sub> emissions (in lbs / ton of acid) can be readily accomplished through other means without the use of an SO<sub>2</sub> analyzer at the converter inlet.

**Alternative Monitoring Plan for SO<sub>2</sub> Emissions  
Rhodia Inc. Houston, TX Unit 2  
Single Absorption Sulfuric Acid Regeneration Plant with Scrubber**

**Justification for Using an Alternative Monitoring Plan (AMP) for SO<sub>2</sub> emissions**

The regulations that established the NSPS for sulfuric acid plants are over 30 years old. At the time, the regulatory standard was established as 4 lb of SO<sub>2</sub> emissions per ton of 100 % sulfuric acid produced, and compliance with the standard was to be demonstrated using a calculation similar to Equation 1 below. Regulations required the use of a CEMS to measure SO<sub>2</sub> concentration at the stack (M2), but only required measurement of SO<sub>2</sub> entering the converter by suitable method three times per calendar day. Plants typically rely on the use of a Reich test once per shift to establish the SO<sub>2</sub> concentration entering the converter (M1). While the stack measurement represented a nearly continuous real time indication of the stack concentration, performing a Reich test once per shift for the converter inlet concentration provides little more than a random sample once every eight hours.

The methodology proposed in this AMP will provide a more continuous real-time indication of compliance by using a process analyzer to measure the converter inlet SO<sub>2</sub> concentration. While this analyzer will be nearly identical to the CEMS that is commonly used at the stack, it will not be able to meet all of the standards that are usually applied to a CEMS because of the process conditions and / or physical limitations of an existing facility. For example, it is not feasible to modify the existing ductwork around the analyzer to meet the normal guidelines for straight runs of pipe upstream / downstream of the analyzer. We believe that the disadvantages (places where the analyzer is not quite up to CEMS standards) are far outweighed by the advantages of using a real time instrument, rather than a periodic Reich test, to measure the converter inlet concentration. Rhodia will use best professional judgment to ensure the analyzer located at the converter inlet provides representative data.

Except as noted in this document, the objective of this proposed AMP is to maintain the process analyzer at the converter inlet in a manner that is similar to the stack CEMS, as set forth in 40 CFR Part 60, Appendix B and F.

**Definitions**

"CEMS" or "Continuous Emission Monitoring System" shall mean equipment that continuously measures and records the concentration and/or emission rate of a pollutant, in the units specified by the emission limit concerned.

"Long-Term Limit" shall mean a sulfur dioxide (SO<sub>2</sub>) emission limit for a sulfuric acid plant expressed as pounds per ton of 100% sulfuric acid produced ("lbs/ton"), averaged over all Operating Hours in a rolling 365-day period.

"Malfunction" shall mean, consistent with 40 C.F.R. § 60.2, any sudden, infrequent, and not reasonably preventable failure of air pollution control equipment, process equipment, or a process to operate in a normal or usual manner, but shall not include failures that are caused in part by poor maintenance or careless operation.

"Operating Hours" shall mean periods during which sulfur or sulfur-bearing compounds, excluding conventional fossil fuels such as natural gas or fuel oil, are being fed to the furnace.

"Short-Term Limit" shall mean the SO<sub>2</sub> emission limit for each sulfuric acid plant expressed as pounds per ton of 100% sulfuric acid produced ("lbs/ton"), averaged over each rolling 3-hour period. Except for periods of Startup, Shutdown and Malfunction, the Short-Term Limits established under this Consent Decree shall apply at all times.

"Shutdown" shall mean the cessation of operation of a sulfuric acid plant for any reason. Shutdown begins at the time sulfur or sulfur-bearing feeds, excluding conventional fossil fuels such as natural gas or fuel oil, to the furnace ceases.

"Startup" shall mean the 24-hour period at any sulfuric acid plant beginning when the feed of sulfur or sulfur-bearing materials, excluding conventional fossil fuels such as natural gas or fuel oil, to the furnace commences after a main gas blower shutdown.

#### **Pt. 60.84 Emissions Monitoring.**

Compliance with the Long-Term Limit and Short-Term Limit defined by the Consent Decree will be demonstrated using SO<sub>2</sub> analyzers at the converter inlet and exit stack using the following equation. Refer to additional discussion below the equation for specific details related to data input and calculation.

##### Equation 1

$$Xe = (M1 - M2)/(M1 - 1.5 \times M1 \times M2)$$

$$E = (K / Xe) - K$$

Where:

- Xe = fractional conversion efficiency
- M1 = fractional concentration of SO<sub>2</sub> entering the converter
- M2 = fractional concentration of SO<sub>2</sub> at the stack
- E = SO<sub>2</sub> emission rate in lb / ton of 100 % acid produced
- K = 1306 = (2000 lb / ton ) x (64 lb / lbmol SO<sub>2</sub>)/(98 lb / lbmol H<sub>2</sub>SO<sub>4</sub>)

##### Short-Term Limit

The following procedure and calculation will be performed once every five minutes during all Operating Hours, except periods of Startup, Shutdown or Malfunction, to demonstrate compliance with the Short-Term Limit for SO<sub>2</sub>.

- At any given time the system will maintain an array consisting of the 36 most recent samples of the SO<sub>2</sub> concentrations at the converter inlet and at the exit stack.
- Once every five minutes, the system will sample the latest SO<sub>2</sub> concentrations, add the recent readings to the array and delete the oldest readings. If the unit is not operating then the array of data will not change.
- M1<sub>3hravg</sub> will then be calculated as the arithmetic average of the 36 most recent data samples for the fractional concentration of SO<sub>2</sub> entering the converter (M1<sub>3hravg</sub>).
- M2<sub>3hravg</sub> will then be calculated as the arithmetic average of the 36 most recent data samples for the fractional concentration of SO<sub>2</sub> at the stack (M2<sub>3hravg</sub>).
- The rolling 3 hour average SO<sub>2</sub> emissions (E<sub>3hravg</sub>) will then be calculated per Equation 2.

##### Equation 2 (rolling 3 hour average SO<sub>2</sub> emissions)

$$Xe_{3hravg} = (M1_{3hravg} - M2_{3hravg})/(M1_{3hravg} - 1.5 \times M1_{3hravg} \times M2_{3hravg})$$

$$E_{3hravg} = (K / Xe_{3hravg}) - K$$

- The production unit will be deemed to be operating in compliance with the Short Term Limit if E<sub>3hr-avg</sub> does not exceed 3.0 lb of SO<sub>2</sub> per ton of 100% sulfuric acid produced during all Operating Hours except periods of Startup, Shutdown or Malfunction.

During routine calibration checks and adjustments of the SO<sub>2</sub> monitors, the SO<sub>2</sub> measurement will be "frozen" at its pre-calibration level. Refer to System Maintenance and Malfunction for guidance during CEMS malfunctions, breakdowns, and repairs.

### Long-Term Limit

The following method will be used to calculate the daily average lb of SO<sub>2</sub> per ton of 100% sulfuric acid, and the number of Operating Hours for the calendar day.

- Once every five minutes during all Operating Hours, the SO<sub>2</sub> concentrations (converter inlet and exit stack) will be sampled and this time will be counted as five operating minutes. If the unit is not operating, then the SO<sub>2</sub> concentrations will not be sampled.
- The daily average will be calculated as follows for each calendar day:
  - o M1<sub>daily avg</sub> will be calculated as the arithmetic average of the sample population for the fractional concentration of SO<sub>2</sub> entering the converter.
  - o M2<sub>daily avg</sub> will be calculated as the arithmetic average of the sample population for the fractional concentration of SO<sub>2</sub> at the stack
  - o E<sub>(daily avg)</sub> will then be calculated using Equation 3.

#### Equation 3 (daily average SO<sub>2</sub> emissions)

$$X_{e\text{daily avg}} = (M1_{\text{daily avg}} - M2_{\text{daily avg}}) / (M1_{\text{daily avg}} - 1.5 \times M1_{\text{daily avg}} \times M2_{\text{daily avg}})$$
$$E_{\text{daily avg}} = (K / X_{e\text{daily avg}}) - K$$

- o The number of operating minutes for the day will be summed (T<sub>day</sub> )
- o E<sub>dayavg</sub> and T<sub>day</sub> will be used to calculate a 365-day rolling average of lb/ton. The daily averages will be weighted by the number of operating minutes per day, as per Equation 4.

Once the system has been in operation for 365 days, compliance with the Long Term Limit (365-day rolling average) SO<sub>2</sub> emission rate will be calculated using Equation 4.

#### Equation 4

$$E_{365\text{avg}} = \frac{\sum [E_{\text{dayavg}} * T_{\text{day}}]}{\sum T_{\text{day}}}$$

The production unit will be deemed to be operating in compliance with the Long-Term Limit if E<sub>365avg</sub> does not exceed 1.8 lb of SO<sub>2</sub> per ton of 100% sulfuric acid produced during all Operating Hours

During routine calibration checks and adjustments of the SO<sub>2</sub> monitors, the SO<sub>2</sub> measurement will be "frozen" at its pre-calibration level. Refer to System Maintenance and Malfunction for guidance during CEMS malfunction, breakdowns, and repairs:

### **Pt. 60.84 Emissions Monitoring Pt. 60, App. B, Spec. 2, Section 6.0 (Stack and Converter Inlet Analyzers)**

Rhodia proposes to use the following stack analyzer specifications to satisfy the requirements of Pt. 60.84 and Pt. 60, App. B, Spec. 2, Section 6.0. The stack analyzer span must be capable of accommodating elevated emissions during startup. Specifications for the analyzer located at the converter inlet are based on Rhodia's experience with process analyzers at these locations.

An equivalent analyzer may be substituted for any reason.

Location	Manufacturer	Model Number	Range
Stack	Ametek Photometric Analyzer (or equivalent)	920 (or equivalent)	Dual range: Normal: 0 – 500 ppm SO <sub>2</sub> SSM: 0 – 3,600 ppm SO <sub>2</sub>
Converter Inlet	Ametek Photometric Analyzer (or equivalent)	920 or IPS-4 (or equivalent)	Single range: 0 – 15 % SO <sub>2</sub>

**Pt. 60, App. B, Spec. 2, Section 1.0 (Stack and Converter Inlet Analyzers)**

Initial compliance certification required only if the analyzer is replaced or if system modifications require one to be performed. Additional detail and exceptions noted below under System Modifications below.

**Pt. 60, App. B, Spec. 2, Section 8.0 (Converter Inlet Analyzer)**

Rhodia will select the optimum location to obtain representative SO<sub>2</sub> readings from this location. Turbulence near the blower exit and elevated temperature at the converter inlet may require an analyzer measurement location that differs from the requirements of this section (e.g. pollutant stratification). A pollutant stratification test is not warranted for this application because (a) process conditions make it extremely unlikely that stratification could occur, and (b) the samples obtained under this monitoring plan are the same as would be obtained under the NSPS, except that the instrument will typically take 288 samples per day rather than the 3 required by the NSPS. Therefore, no new stratification risk is introduced by this method, but the instrument will typically take about 100 times as many samples.

**Pt. 60, App. B, Spec. 2, Section 16.0 (Converter Inlet Analyzer)**

Rhodia will use the Alternative Relative Accuracy Procedure provided in Section 16.2.1 (i.e. conduct a cylinder gas audit).

**Pt. 60, App. F, Spec. 2, Section 5.0 (Converter Inlet Analyzer)**

Rhodia will use quarterly cylinder gas audits (i.e. four per year) to satisfy the requirements of this section.

**System Maintenance and Malfunction**

Except for monitoring malfunctions, associated repairs, and required quality assurance or control activities (including calibration checks and required zero and span adjustments), the plant shall conduct monitoring in continuous operation during all Operating Hours as defined above

In the event of a CEMS malfunction of greater than 24 hours:

- Exit stack gas will be sampled and analyzed at least once per hour, during all Operating Hours.. Sampling will be conducted by Reich test or other method (e.g. portable analyzer).
- Converter inlet gas will either be sampled, or estimated using engineering judgment, at least once every four hours during all Operating Hours.
- Compliance with the Short-Term Limit and Long-Term Limit shall be verified by using these data and Equations 2, 3, and 4 with the following exceptions. If the stack CEMS is out of service, the most recent hourly reading will be substituted for the 12 five-minute readings that would otherwise be taken if the system was operating normally. Similarly, if the converter inlet SO<sub>2</sub> analyzer is out of service, the most recent four-hour reading will be substituted for the 48 five-minute readings that would otherwise be taken if the system was operating normally.

In the event of an analyzer malfunction, a like-kind replacement may be used while repairs are being made. A cylinder gas audit (CGA) must be performed on the replacement analyzer as soon as is practicable after it is placed in service. The daily calibration drift requirement would also apply to the replacement analyzer.

### **System Modifications**

Significant replacement, modification, or change in certified CEMS equipment may require a complete recertification. If a recertification is required, it will be conducted within 90 days. Examples include:

- Change in location or orientation of the sampling probe or site
- Complete replacement of an existing continuous emission monitoring system.

When replacing components that can alter the physical characteristics or conditioning of the sample in the field, a CGA is required. The following activities will require a CGA to be performed before returning the analyzer to service.

- Replacement of the analyzer
- Detector replacement
- Replacement of equipment associated with the detector

The following activities are not expected to trigger a CGA. However, it is recommended that a Calibration Drift check be performed before returning to service.

- Filter replacement
- Data Recorder Repairs
- Tubing replacement

General guidance: When replacing components or devices that do not affect the physical characteristics or handling of the gas in the field such as data recorders, a CGA is not required. A calibration drift check normally should be conducted. If the repaired component affects the transport of the gas to the analyzer, such as replacing tubing, a leak check should be conducted.

### **Alternative Monitoring System**

The monitoring system proposed in this Alternative Monitoring Plan is expected to be a significant improvement over the monitoring requirements contained in the NSPS for sulfuric acid plants. However, the real-time calculation of SO<sub>2</sub> emissions is dependent upon the use of an SO<sub>2</sub> analyzer in the inlet duct to the converter, and the maintenance of that analyzer to approximately the same performance standards normally applied to the stack SO<sub>2</sub> CEMS. This is an unproven application of this technology, and there is some risk that the converter inlet SO<sub>2</sub> analyzer will not be able to perform as required despite the best efforts of Rhodia and the instrument manufacturer.

If Rhodia and the instrument manufacturer are unable to make the system operate to the indicated standards because the converter inlet SO<sub>2</sub> analyzer is unreliable and / or inaccurate in this application, then Rhodia will promptly notify EPA Region 6, and TCEQ of its determination and proceed as follows:

- Rhodia will immediately begin meeting its SO<sub>2</sub> emissions monitoring requirements in accordance with 40 CFR Part 60, Subpart H, except that the SO<sub>2</sub> concentration at the converter inlet will be analyzed six times per day rather than the three times per day specified in the regulations.
- Rhodia will provide whatever information is requested by EPA regarding the determination that the converter inlet SO<sub>2</sub> analyzer can not meet the necessary performance standards.
- Rhodia will work with EPA to determine whether real time measurement of SO<sub>2</sub> emissions (in lbs / ton of acid) can be readily accomplished through other means without the use of an SO<sub>2</sub> analyzer at the converter inlet.

**Alternative Monitoring Plan for SO<sub>2</sub> Emissions  
Rhodia Inc. Houston, TX Unit 8  
Single Absorption Sulfuric Acid Plant with Scrubber**

**Justification for Using an Alternative Monitoring Plan (AMP) for SO<sub>2</sub> emissions**

Sulfur dioxide emissions from the Houston 8 sulfuric acid unit will be monitored in accordance with the requirements of the existing NSPS for sulfuric acid plants except as noted in this AMP. The CEMS will demonstrate compliance on a real-time basis with the SO<sub>2</sub> emissions standard (as lbs of SO<sub>2</sub> per ton of 100% sulfuric acid produced) using stack SO<sub>2</sub> and O<sub>2</sub> analyzers. The purpose of this AMP is to document the calculation methods that will be utilized to demonstrate compliance with regulations as modified by the Consent Decree.

**Definitions**

"CEMS" or "Continuous Emission Monitoring System" shall mean equipment that continuously measures and records the concentration and/or emission rate of a pollutant, in the units specified by the emission limit concerned.

"Long-Term Limit" shall mean a sulfur dioxide (SO<sub>2</sub>) emission limit for a sulfuric acid plant expressed as pounds per ton of 100% sulfuric acid produced ("lbs/ton"), averaged over all Operating Hours in a rolling 365-day period.

"Malfunction" shall mean, consistent with 40 C.F.R. § 60.2, any sudden, infrequent, and not reasonably preventable failure of air pollution control equipment, process equipment, or a process to operate in a normal or usual manner, but shall not include failures that are caused in part by poor maintenance or careless operation.

"Operating Hours" shall mean periods during which sulfur or sulfur-bearing compounds, excluding conventional fossil fuels such as natural gas or fuel oil, are being fed to the furnace.

"Short-Term Limit" shall mean the SO<sub>2</sub> emission limit for each sulfuric acid plant expressed as pounds per ton of 100% sulfuric acid produced ("lbs/ton"), averaged over each rolling 3-hour period. Except for periods of Startup, Shutdown and Malfunction, the Short-Term Limits established under this Consent Decree shall apply at all times.

"Shutdown" shall mean the cessation of operation of a sulfuric acid plant for any reason. Shutdown begins at the time sulfur or sulfur-bearing feeds, excluding conventional fossil fuels such as natural gas or fuel oil, to the furnace ceases.

"Startup" shall mean the 24-hour period at any sulfuric acid plant beginning when the feed of sulfur or sulfur-bearing materials, excluding conventional fossil fuels such as natural gas or fuel oil, to the furnace commences after a main gas blower shutdown.

**Pt. 60.84 Emissions Monitoring.**

Compliance with the Long-Term Limit and Short-Term Limit defined by the Consent Decree will be demonstrated using SO<sub>2</sub> and O<sub>2</sub> analyzers at the exit stack using the following equation. Refer to additional discussion below the equation for specific details related to data input and calculation.

### Equation 1

$$X_e = (0.209 - MO_2 - MSO_2) / (0.209 - MO_2 + 0.186 \times MSO_2)$$

$$E = (K / X_e) - K$$

Where:

- X<sub>e</sub> = fractional conversion efficiency
- MO<sub>2</sub> = fractional concentration of O<sub>2</sub> at the stack, dry basis
- MSO<sub>2</sub> = fractional concentration of SO<sub>2</sub> at the stack, dry basis
- E = SO<sub>2</sub> emission rate in lb / ton of 100 % acid produced
- K = 1306 = (2000 lb / ton) x (64 lb / lbmol SO<sub>2</sub>) / (98 lb / lbmol H<sub>2</sub>SO<sub>4</sub>)

### Short-Term Limit

The following procedure and calculation will be performed once every five minutes during all Operating Hours, except periods of Startup, Shutdown or Malfunction, to demonstrate compliance with the Short-Term Limit for SO<sub>2</sub>.

- At any given time the system will maintain an array consisting of the 36 most recent samples of the O<sub>2</sub> and SO<sub>2</sub> concentrations at the exit stack.
- Once every five minutes, the system will sample the latest O<sub>2</sub> and SO<sub>2</sub> concentrations, add the recent readings to the array and delete the oldest readings. If the unit is not operating then the array of data will not change.
- MO<sub>2,3hravg</sub> will then be calculated as the arithmetic average of the 36 most recent data samples for the fractional concentration of O<sub>2</sub> at the stack (MO<sub>2,3hravg</sub>).
- MSO<sub>2,3hravg</sub> will then be calculated as the arithmetic average of the 36 most recent data samples for the fractional concentration of SO<sub>2</sub> at the stack (MSO<sub>2,3hravg</sub>).
- The rolling 3 hour average SO<sub>2</sub> emissions (E<sub>3hravg</sub>) will then be calculated per Equation 2.

#### Equation 2 (rolling 3 hour average SO<sub>2</sub> emissions)

$$X_{e,3hravg} = (0.209 - MO_{2,3hravg} - MSO_{2,3hravg}) / (0.209 - MO_{2,3hravg} + 0.186 \times MSO_{2,3hravg})$$

$$E_{3hravg} = (K / X_{e,3hravg}) - K$$

- The production unit will be deemed to be operating in compliance with the Short Term Limit if E<sub>3hr-avg</sub> does not exceed 3.0 lb of SO<sub>2</sub> per ton of 100% sulfuric acid produced during all Operating Hours except periods of Startup, Shutdown or Malfunction.

During routine calibration checks and adjustments of the O<sub>2</sub> or SO<sub>2</sub> monitors, the O<sub>2</sub> or SO<sub>2</sub> measurement will be "frozen" at its pre-calibration level. Refer to System Maintenance and Malfunction for guidance during CEMS malfunctions, breakdowns, and repairs.

### Long-Term Limit

The following method will be used to calculate the daily average lb of SO<sub>2</sub> per ton of 100% sulfuric acid, and the number of Operating Hours for the calendar day.

- Once every five minutes during all Operating Hours, the O<sub>2</sub> and SO<sub>2</sub> concentrations at the exit stack will be sampled and this time will be counted as five operating minutes. If the unit is not operating, then the O<sub>2</sub> and SO<sub>2</sub> concentrations will not be sampled.
- The daily average will be calculated as follows for each calendar day:
  - o MO<sub>2,daily avg</sub> will be calculated as the arithmetic average of the sample population for the fractional concentration of O<sub>2</sub> at the stack.
  - o MSO<sub>2,daily avg</sub> will be calculated as the arithmetic average of the sample population for the fractional concentration of SO<sub>2</sub> at the stack
  - o E<sub>(daily avg)</sub> will then be calculated using Equation 3.

Equation 3 (daily average SO<sub>2</sub> emissions)

$$X_{e_{\text{daily avg}}} = (0.209 - MO_{2_{\text{daily avg}}} - MSO_{2_{\text{daily avg}}}) / (0.209 - MO_{2_{\text{daily avg}}} + 0.186 \times MSO_{2_{\text{daily avg}}})$$
$$E_{\text{daily avg}} = (K / X_{e_{\text{daily avg}}}) - K$$

- o The number of operating minutes for the day will be summed (T<sub>day</sub> )
- o E<sub>dayavg</sub> and T<sub>day</sub> will be used to calculate a 365-day rolling average of lb/ton. The daily averages will be weighted by the number of operating minutes per day, as per Equation 4.

Once the system has been in operation for 365 days, compliance with the Long Term Limit (365-day rolling average) SO<sub>2</sub> emission rate will be calculated using Equation 4.

Equation 4

$$E_{365\text{avg}} = \frac{\sum [E_{\text{dayavg}} * T_{\text{day}}]}{\sum T_{\text{day}}}$$

The production unit will be deemed to be operating in compliance with the Long-Term Limit if E<sub>365avg</sub> does not exceed 1.7 lb of SO<sub>2</sub> per ton of 100% sulfuric acid produced during all Operating Hours

During routine calibration checks and adjustments of the O<sub>2</sub> or SO<sub>2</sub> monitors, the O<sub>2</sub> or SO<sub>2</sub> measurement will be "frozen" at its pre-calibration level. Refer to System Maintenance and Malfunction for guidance during CEMS malfunction, breakdowns, and repairs:

**Pt. 60.84 Emissions Monitoring Pt. 60, App. B, Spec. 2, Section 6.0 (Stack Analyzers)**

Rhodia proposes to use the following stack analyzer specifications to satisfy the requirements of Pt. 60.84 and Pt. 60, App. B, Spec. 2, Section 6.0. The stack analyzer span must be capable of accommodating elevated emissions during startup.

An equivalent analyzer may be substituted for any reason.

Location	Manufacturer	Model Number	Range
Stack SO <sub>2</sub>	Ametek Photometric Analyzer (or equivalent)	920 (or equivalent)	Dual range: Normal: 0 – 500 ppm SO <sub>2</sub> SSM: 0 – 3,600 ppm SO <sub>2</sub>
Stack O <sub>2</sub>	Ametek Oxygen Analyzer (or equivalent)	920 (or equivalent)	Single range: 0 – 20.9 % O <sub>2</sub>

**Pt. 60, App. B, Spec. 2, Section 1.0 (Stack Analyzers)**

Initial compliance certification required only if the analyzer is replaced or if system modifications require one to be performed. Additional detail and exceptions noted below under System Modifications below.

**System Maintenance and Malfunction**

Except for monitoring malfunctions, associated repairs, and required quality assurance or control activities (including calibration checks and required zero and span adjustments), the plant shall conduct monitoring in continuous operation during all Operating Hours as defined above

In the event of a CEMS malfunction of greater than 24 hours:

- SO<sub>2</sub> in the exit stack gas will be sampled and analyzed at least once per hour, during all Operating Hours.. Sampling will be conducted by Reich test or other method (e.g. portable analyzer).
- O<sub>2</sub> in the exit stack gas will be sampled and analyzed at least once per hour, during all Operating Hours.. Sampling will be conducted by Orsat test or other method (e.g. portable analyzer)
- Compliance with the Short-Term Limit and Long-Term Limit shall be verified by using these data and Equations 2, 3, and 4 with the following exception. Given that one or both of the stack CEMS is out of service, the most recent hourly reading(s) will be substituted for the 12 (24) five-minute readings that would otherwise be taken if the system was operating normally

In the event of an analyzer malfunction, a like-kind replacement may be used while repairs are being made. A cylinder gas audit (CGA) must be performed on the replacement analyzer as soon as is practicable after it is placed in service. The daily calibration drift requirement would also apply to the replacement analyzer.

### **System Modifications**

Significant replacement, modification, or change in certified CEMS equipment may require a complete recertification. If a recertification is required, it will be conducted within 90 days. Examples include:

- Change in location or orientation of the sampling probe or site
- Complete replacement of an existing continuous emission monitoring system.

When replacing components that can alter the physical characteristics or conditioning of the sample in the field, a CGA is required. The following activities will require a CGA to be performed before returning the analyzer to service.

- Replacement of the analyzer
- Detector replacement
- Replacement of equipment associated with the detector

The following activities are not expected to trigger a CGA. However, it is recommended that a Calibration Drift check be performed before returning to service.

- Filter replacement
- Data Recorder Repairs
- Tubing replacement

General guidance: When replacing components or devices that do not affect the physical characteristics or handling of the gas in the field such as data recorders, a CGA is not required. A calibration drift check normally should be conducted. If the repaired component affects the transport of the gas to the analyzer, such as replacing tubing, a leak check should be conducted.

**Alternative Monitoring Plan for SO<sub>2</sub> Emissions  
Rhodia Inc. Martinez, California  
Single Absorption Sulfuric Acid Regeneration Plant with Scrubber**

**Justification for Using an Alternative Monitoring Plan (AMP) for SO<sub>2</sub> emissions**

The regulations that established the NSPS for sulfuric acid plants are over 30 years old. At the time, the regulatory standard was established as 4 lb of SO<sub>2</sub> emissions per ton of 100 % sulfuric acid produced, and compliance with the standard was to be demonstrated using a calculation similar to Equation 1 below. Regulations required the use of a CEMS to measure SO<sub>2</sub> concentration at the stack (M2), but only required measurement of SO<sub>2</sub> entering the converter by suitable method three times per calendar day. Plants typically rely on the use of a Reich test once per shift to establish the SO<sub>2</sub> concentration entering the converter (M1). While the stack measurement represented a nearly continuous real time indication of the stack concentration, performing a Reich test once per shift for the converter inlet concentration provides little more than a random sample once every eight hours.

The methodology proposed in this AMP will provide a more continuous real-time indication of compliance by using a process analyzer to measure the converter inlet SO<sub>2</sub> concentration. While this analyzer will be nearly identical to the CEMS that is commonly used at the stack, it will not be able to meet all of the standards that are usually applied to a CEMS because of the process conditions and / or physical limitations of an existing facility. For example, it is not feasible to modify the existing ductwork around the analyzer to meet the normal guidelines for straight runs of pipe upstream / downstream of the analyzer. We believe that the disadvantages (places where the analyzer is not quite up to CEMS standards) are far outweighed by the advantages of using a real time instrument, rather than a periodic Reich test, to measure the converter inlet concentration. Rhodia will use best professional judgment to ensure the analyzer located at the converter inlet provides representative data.

Except as noted in this document, the objective of this proposed AMP is to maintain the process analyzer at the converter inlet in a manner that is similar to the stack CEMS, as set forth in 40 CFR Part 60, Appendix B and F.

**Definitions**

"CEMS" or "Continuous Emission Monitoring System" shall mean equipment that continuously measures and records the concentration and/or emission rate of a pollutant, in the units specified by the emission limit concerned.

"Long-Term Limit" shall mean a sulfur dioxide (SO<sub>2</sub>) emission limit for a sulfuric acid plant expressed as pounds per ton of 100% sulfuric acid produced ("lbs/ton"), averaged over all Operating Hours in a rolling 365-day period.

"Malfunction" shall mean, consistent with 40 C.F.R. § 60.2, any sudden, infrequent, and not reasonably preventable failure of air pollution control equipment, process equipment, or a process to operate in a normal or usual manner, but shall not include failures that are caused in part by poor maintenance or careless operation.

"Operating Hours" shall mean periods during which sulfur or sulfur-bearing compounds, excluding conventional fossil fuels such as natural gas or fuel oil, are being fed to the furnace.

"Short-Term Limit" shall mean the SO<sub>2</sub> emission limit for each sulfuric acid plant expressed as pounds per ton of 100% sulfuric acid produced ("lbs/ton"), averaged over each rolling 3-hour period. Except for periods of Startup, Shutdown and Malfunction, the Short-Term Limits established under this Consent Decree shall apply at all times.

"Shutdown" shall mean the cessation of operation of a sulfuric acid plant for any reason. Shutdown begins at the time sulfur or sulfur-bearing feeds, excluding conventional fossil fuels such as natural gas or fuel oil, to the furnace ceases

"Startup" shall mean the 24-hour period at any sulfuric acid plant beginning when the feed of sulfur or sulfur-bearing materials, excluding conventional fossil fuels such as natural gas or fuel oil, to the furnace commences after a main gas blower shutdown.

#### **Pt. 60.84 Emissions Monitoring.**

Compliance with the Long-Term Limit and Short-Term Limit defined by the Consent Decree will be demonstrated using SO<sub>2</sub> analyzers at the converter inlet and exit stack using the following equation. Refer to additional discussion below the equation for specific details related to data input and calculation.

##### Equation 1

$$Xe = (M1 - M2)/(M1 - 1.5 \times M1 \times M2)$$

$$E = (K / Xe) - K$$

Where:

- Xe = fractional conversion efficiency
- M1 = fractional concentration of SO<sub>2</sub> entering the converter
- M2 = fractional concentration of SO<sub>2</sub> at the stack
- E = SO<sub>2</sub> emission rate in lb / ton of 100 % acid produced
- K = 1306 = (2000 lb / ton ) x (64 lb / lbmol SO<sub>2</sub>)/(98 lb / lbmol H<sub>2</sub>SO<sub>4</sub>)

##### Short-Term Limit

The following procedure and calculation will be performed once every five minutes during all Operating Hours, except periods of Startup, Shutdown or Malfunction, to demonstrate compliance with the Short-Term Limit for SO<sub>2</sub>.

- At any given time the system will maintain an array consisting of the 36 most recent samples of the SO<sub>2</sub> concentrations at the converter inlet and at the exit stack.
- Once every five minutes, the system will sample the latest SO<sub>2</sub> concentrations, add the recent readings to the array and delete the oldest readings. If the unit is not operating then the array of data will not change.
- M1<sub>3hravg</sub> will then be calculated as the arithmetic average of the 36 most recent data samples for the fractional concentration of SO<sub>2</sub> entering the converter (M1<sub>3hravg</sub>).
- M2<sub>3hravg</sub> will then be calculated as the arithmetic average of the 36 most recent data samples for the fractional concentration of SO<sub>2</sub> at the stack (M2<sub>3hravg</sub>).
- The rolling 3 hour average SO<sub>2</sub> emissions (E<sub>3hravg</sub>) will then be calculated per Equation 2.

##### Equation 2 (rolling 3 hour average SO<sub>2</sub> emissions)

$$Xe_{3hravg} = (M1_{3hravg} - M2_{3hravg}) / (M1_{3hravg} - 1.5 \times M1_{3hravg} \times M2_{3hravg})$$

$$E_{3hravg} = (K / Xe_{3hravg}) - K$$

- The production unit will be deemed to be operating in compliance with the Short Term Limit if E<sub>3hr-avg</sub> does not exceed 3.0 lb of SO<sub>2</sub> per ton of 100% sulfuric acid produced during all Operating Hours except periods of Startup, Shutdown or Malfunction.

During routine calibration checks and adjustments of the SO<sub>2</sub> monitors, the SO<sub>2</sub> measurement will be "frozen" at its pre-calibration level. Refer to System Maintenance and Malfunction for guidance during CEMS malfunctions, breakdowns, and repairs.

### Long-Term Limit

The following method will be used to calculate the daily average lb of SO<sub>2</sub> per ton of 100% sulfuric acid, and the number of Operating Hours for the calendar day.

- Once every five minutes during all Operating Hours, the SO<sub>2</sub> concentrations (converter inlet and exit stack) will be sampled and this time will be counted as five operating minutes. If the unit is not operating, then the SO<sub>2</sub> concentrations will not be sampled.
- The daily average will be calculated as follows for each calendar day:
  - o M1<sub>daily avg</sub> will be calculated as the arithmetic average of the sample population for the fractional concentration of SO<sub>2</sub> entering the converter.
  - o M2<sub>daily avg</sub> will be calculated as the arithmetic average of the sample population for the fractional concentration of SO<sub>2</sub> at the stack
  - o E<sub>(daily avg)</sub> will then be calculated using Equation 3.

Equation 3 (daily average SO<sub>2</sub> emissions)

$$X_{e_{daily\ avg}} = (M1_{daily\ avg} - M2_{daily\ avg}) / (M1_{daily\ avg} - 1.5 \times M1_{daily\ avg} \times M2_{daily\ avg})$$
$$E_{daily\ avg} = (K / X_{e_{daily\ avg}}) - K$$

- o The number of operating minutes for the day will be summed (T<sub>day</sub> )
- o E<sub>dayavg</sub> and T<sub>day</sub> will be used to calculate a 365-day rolling average of lb/ton. The daily averages will be weighted by the number of operating minutes per day, as per Equation 4.

Once the system has been in operation for 365 days, compliance with the Long Term Limit (365-day rolling average) SO<sub>2</sub> emission rate will be calculated using Equation 4.

Equation 4

$$E_{365avg} = \frac{\sum [E_{dayavg} * T_{day}]}{\sum T_{day}}$$

The production unit will be deemed to be operating in compliance with the Long-Term Limit if E<sub>365avg</sub> does not exceed 2.2 lb of SO<sub>2</sub> per ton of 100% sulfuric acid produced during all Operating Hours

During routine calibration checks and adjustments of the SO<sub>2</sub> monitors, the SO<sub>2</sub> measurement will be "frozen" at its pre-calibration level. Refer to System Maintenance and Malfunction for guidance during CEMS malfunction, breakdowns, and repairs:

#### **Pt. 60.84 Emissions Monitoring Pt. 60, App. B, Spec. 2, Section 6.0 (Stack and Converter Inlet Analyzers)**

Rhodia proposes to use the following stack analyzer specifications to satisfy the requirements of Pt. 60.84 and Pt. 60, App. B, Spec. 2, Section 6.0. The stack analyzer span must be capable of accommodating elevated emissions during startup. Specifications for the analyzer located at the converter inlet are based on Rhodia's experience with process analyzers at these locations.

An equivalent analyzer may be substituted for any reason.

Location	Manufacturer	Model Number	Range
Stack	Ametek Photometric Analyzer (or equivalent)	460 (or equivalent)	Dual range: Normal: 0 – 500 ppm SO <sub>2</sub> SSM: 0 – 4,000 ppm SO <sub>2</sub>
Converter Inlet	Ametek Photometric Analyzer (or equivalent)	920 or IPS-4 (or equivalent)	Single range: 0 – 15 % SO <sub>2</sub>

**Pt. 60, App. B, Spec. 2, Section 1.0 (Stack and Converter Inlet Analyzers)**

Initial compliance certification required only if the analyzer is replaced or if system modifications require one to be performed. Additional detail and exceptions noted below under System Modifications below.

**Pt. 60, App. B, Spec. 2, Section 8.0 (Converter Inlet Analyzer)**

Rhodia will select the optimum location to obtain representative SO<sub>2</sub> readings from this location. Turbulence near the blower exit and elevated temperature at the converter inlet may require an analyzer measurement location that differs from the requirements of this section (e.g. pollutant stratification). A pollutant stratification test is not warranted for this application because (a) process conditions make it extremely unlikely that stratification could occur, and (b) the samples obtained under this monitoring plan are the same as would be obtained under the NSPS, except that the instrument will typically take 288 samples per day rather than the 3 required by the NSPS. Therefore, no new stratification risk is introduced by this method, but the instrument will typically take about 100 times as many samples.

**Pt. 60, App. B, Spec. 2, Section 16.0 (Converter Inlet Analyzer)**

Rhodia will use the Alternative Relative Accuracy Procedure provided in Section 16.2.1 (i.e. conduct a cylinder gas audit).

**Pt. 60, App. F, Spec. 2, Section 5.0 (Converter Inlet Analyzer)**

Rhodia will use quarterly cylinder gas audits (i.e. four per year) to satisfy the requirements of this section.

**System Maintenance and Malfunction**

Except for monitoring malfunctions, associated repairs, and required quality assurance or control activities (including calibration checks and required zero and span adjustments), the plant shall conduct monitoring in continuous operation during all Operating Hours as defined above

In the event of a CEMS malfunction of greater than 24 hours:

- Exit stack gas will be sampled and analyzed at least once per hour, during all Operating Hours.. Sampling will be conducted by Reich test or other method (e.g. portable analyzer).
- Converter inlet gas will either be sampled, or estimated using engineering judgment, at least once every four hours during all Operating Hours.
- Compliance with the Short-Term Limit and Long-Term Limit shall be verified by using these data and Equations 2, 3, and 4 with the following exceptions. If the stack CEMS is out of service, the most recent hourly reading will be substituted for the 12 five-minute readings that would otherwise be taken if the system was operating normally. Similarly, if the converter inlet SO<sub>2</sub> analyzer is out of service, the most recent four-hour reading will be substituted for the 48 five-minute readings that would otherwise be taken if the system was operating normally.

In the event of an analyzer malfunction, a like-kind replacement may be used while repairs are being made. A cylinder gas audit (CGA) must be performed on the replacement analyzer as soon as is practicable after it is placed in service. The daily calibration drift requirement would also apply to the replacement analyzer.

### **System Modifications**

Significant replacement, modification, or change in certified CEMS equipment may require a complete recertification. If a recertification is required, it will be conducted within 90 days. Examples include:

- Change in location or orientation of the sampling probe or site
- Complete replacement of an existing continuous emission monitoring system.

When replacing components that can alter the physical characteristics or conditioning of the sample in the field, a CGA is required. The following activities will require a CGA to be performed before returning the analyzer to service.

- Replacement of the analyzer
- Detector replacement
- Replacement of equipment associated with the detector

The following activities are not expected to trigger a CGA. However, it is recommended that a Calibration Drift check be performed before returning to service.

- Filter replacement
- Data Recorder Repairs
- Tubing replacement

General guidance: When replacing components or devices that do not affect the physical characteristics or handling of the gas in the field such as data recorders, a CGA is not required. A calibration drift check normally should be conducted. If the repaired component affects the transport of the gas to the analyzer, such as replacing tubing, a leak check should be conducted.

### **Alternative Monitoring System**

The monitoring system proposed in this Alternative Monitoring Plan is expected to be a significant improvement over the monitoring requirements contained in the NSPS for sulfuric acid plants. However, the real-time calculation of SO<sub>2</sub> emissions is dependent upon the use of an SO<sub>2</sub> analyzer in the inlet duct to the converter, and the maintenance of that analyzer to approximately the same performance standards normally applied to the stack SO<sub>2</sub> CEMS. This is an unproven application of this technology, and there is some risk that the converter inlet SO<sub>2</sub> analyzer will not be able to perform as required despite the best efforts of Rhodia and the instrument manufacturer.

If Rhodia and the instrument manufacturer are unable to make the system operate to the indicated standards because the converter inlet SO<sub>2</sub> analyzer is unreliable and / or inaccurate in this application, then Rhodia will promptly notify EPA Region 9, and BAAQMD of its determination and proceed as follows:

- Rhodia will immediately begin meeting its SO<sub>2</sub> emissions monitoring requirements in accordance with 40 CFR Part 60, Subpart H, except that the SO<sub>2</sub> concentration at the converter inlet will be analyzed six times per day rather than the three times per day specified in the regulations.
- Rhodia will provide whatever information is requested by EPA regarding the determination that the converter inlet SO<sub>2</sub> analyzer can not meet the necessary performance standards.
- Rhodia will work with EPA to determine whether real time measurement of SO<sub>2</sub> emissions (in lbs / ton of acid) can be readily accomplished through other means without the use of an SO<sub>2</sub> analyzer at the converter inlet.