



P.O. Box 48 Aurora, North Carolina 27806

Note: This is a reference cited in AP 42, *Compilation of Air Pollutant Emission Factors, Volume I Stationary Point and Area Sources*. AP42 is located on the EPA web site at [www.epa.gov/ttn/chief/ap42/](http://www.epa.gov/ttn/chief/ap42/)

The file name refers to the reference number, the AP42 chapter and section. The file name "ref02\_c01s02.pdf" would mean the reference is from AP42 chapter 1 section 2. The reference may be from a previous version of the section and no longer cited. The primary source should always be checked.

June 19, 1991

**W.A. Schimming**  
Manager  
Environmental Affairs  
(919) 322-4111

Jim Mulligan, Regional Supervisor  
Washington Regional Office  
Division of Environmental Management  
N. C. Department of EHNR  
P. O. Box 1507  
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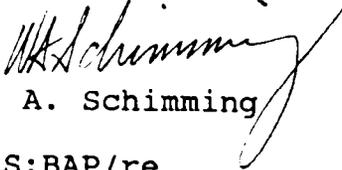
Re: **Air Permit No. 5625R4**  
**Sulfuric Acid Plant No. 6**

Dear Jim:

As per the requirements of Air Quality Permit No. 5625R4, Specific Condition and Limitation No. 6, the Sulfuric Acid Plant No. 6 was compliance tested for sulfuric acid mist and sulfur dioxide on June 6, 1991. A copy of the compliance test results are attached for your review.

If I may provide any additional information on this subject, please let me know.

Sincerely,

  
W. A. Schimming

WAS:BAP/re

Enclosure

pc: Vic Copelan - DEM, WRO (w/encl)  
Mike Aldridge - DEM, Raleigh (w/encl)  
W. T. Cooper (w/encl)  
W. K. Thornton (w/encl)  
J. C. Carrere (w/encl)  
00-12-000 (w/o encl)  
15-09-023 (w/encl)

**SOURCE PERFORMANCE TEST  
SULFURIC ACID PLANT NUMBER 6**

**TEXASGULF INC.**

**PHOSPHATE OPERATIONS**

**AURORA, NC**

**JUNE 06, 1991**

**PREPARED BY:**

**JOHN C. CARRERE, JR.  
ENV. DATA COORDINATOR**

**REVIEWED BY:**

**JIMMY A. HARDY  
SR. ENV. TECHNICIAN**

**REVIEWED BY:**

**MIKE L. ASBY  
ENV. LAB SUPERVISOR**

# TEXASGULF INC. PHOSPHATE OPERATIONS

## Summary

On June 06, 1991 sampling and analyses were conducted to determine the Sulfuric Acid Mist and Sulfur Dioxide emissions using EPA approved Method 8: Determination of Sulfuric Acid Mist and Sulfur Dioxide Emissions From Stationary Sources, on Sulfuric Acid Plant Number 6.

Senior Environmental Technician Brad Lee and Environmental Technicain Jack Taylor performed the stack sampling. Senior Environmental Technician Phillip Forest performed the analyses.

Mr. David Daniel of the North Carolina Division of Environmental Management was present during the testing as an official observer.

The results of these series of tests show the Sulfuric Acid Mist emission rate to be 0.021 pounds per ton of product. The Sulfur Dioxide emission rate was shown to be 3.72 pounds per ton of product. The allowable emission rates for sulfuric acid mist and sulfur dioxides are 0.15 and 4.0 pound per ton of product, respectively. Sulfuric Acid Plant Number 6 is operating within the specifications set forth by the Code of Federal Regulations. A total of 3 stack samples were taken.

# TEXASGULF INC. PHOSPHATE OPERATIONS

## Calculations

1) Production Rate Tons/Day =  $\frac{(((((A-B) \times C)/D) \times E) \times F) \times G}{H}$

2) Lbs of Mist/Ton of Product =  $\frac{(I \times E) \times J}{M}$

3) Lbs of SO<sub>2</sub>/Ton of Product =  $\frac{(L \times E) \times J}{M}$

4) %SO<sub>2</sub> by Volume =  $L/652.8$

Where: A = Initial Acid Totalizer Reading  
B = Final Acid Totalizer Reading  
C = Totalizer Factor ( 1 count = 100 Gallons)  
D = Number of Minutes Between Totalizer Readings  
E = 1440 Minutes/24 Hours  
F = Decimal Equivalent of Acid Strength  
G = Sp. Gr. x 8.34  
H = 2000 Lbs/Ton  
I = H<sub>2</sub>SO<sub>4</sub> Mist Lbs./DSCF  
J = Stack Volumetric Flow  
K = Production Rate Tons/Day  
L = SO<sub>2</sub> Lbs./DSCF  
M = Production Rate TPD (Lab Analyses)

# TEXASGULF INC. PHOSPHATE OPERATIONS

## Test Summary - Sulfuric Acid Plant Number 6

EPA Method 8 - Source Performance Test

06/06/91

	Run 1	Run 2	Run 3
Stack Volume Flow Rate, SCFM	157,274	157,999	158,545
Sample Volume, DSCF	53.16	43.20	42.41
Production Rate, TPD @ 100% H <sub>2</sub> SO <sub>4</sub>	→ 3600	3599	3656
H <sub>2</sub> SO <sub>4</sub> Mist mg/DSCF	0.31	0.27	0.25
H <sub>2</sub> SO <sub>4</sub> Mist Emission Rate, #'s/Ton of Product	→ 0.043	0.010	0.010
Stack Test Sulfur Dioxide, % by Volume	0.0390	0.0384	0.0366
Sulfur Dioxide mg/DSCF	27.52	27.10	25.80
Stack Test Lbs SO <sub>2</sub> /Ton of Product	→ 3.82	3.78	3.55
Isokinetic Rate	95.3	99.2	100.5
Average Lbs of Mist/Ton of Product (3 runs)		0.021	
Average Lbs of SO <sub>2</sub> /Ton of Product (3 runs)		3.72	

Note: All emission rates based on 100% H<sub>2</sub>SO<sub>4</sub> production.

# TEXASGULF INC. PHOSPHATE OPERATIONS

Sulfuric Acid Plant No. 6

## Stack Data Summary

06/06/91

Time	Run #	Velocity FPS	Stack Volume FT3/Min	Temp (oF)
10:42	1	40.375	157,274	154
12:44	2	40.640	157,999	155
15:30	3	40.774	158,545	155

Note: All results are in dry standard feet.

# TEXASGULF INC. PHOSPHATE OPERATIONS

## Sulfuric Acid Plant No. 6 Method 8 Source Performance Test

### Production Information

06/06/91	<u>Test 1</u>	<u>Test 2</u>	<u>Test 3</u>
% H2SO4	94.00	93.96	94.29
S. G. @ 20 oC	1.8312	1.8312	1.8319
Acid GPM	348.3	348.3	352.5
Production Rate TPD 100% H2SO4	3600	3599	3656

### Example Calculation

$(348.3 \text{ gpm} \times 60 \text{ min.} \times 24 \text{ hr.} \times 8.34 \text{ Lbs/Gal (Water)} \times 0.94 \text{ Dec. Eq.} \times 1.8312 \text{ Sp. Gr.}) / 2000 \text{ Lbs/Ton} = 3600 \text{ TPD}$