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Texasgulf Inc.
elf aquitaine group

P.O. Box 48 Aurora, North Carolina 27806



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

November 20, 1991

Mr. Jim Mulligan
Regional Supervisor
Division of Environmental Management
N. C. Department of EHNR
P. O. Box 2188
Washington, North Carolina 27889

Dear Jim:

As per the requirements of Air Quality Permit No. 4491R5, Specific Conditions and Limitations No. 9, the Sulfuric Acid Plant No. 5 has been compliance tested for sulfur dioxide and sulfuric acid mist on October 22 and 23, 1991. A copy of the compliance test results are attached for your review.

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

Sincerely,

W.A. Schimming
W. A. Schimming

WAS:MLA/re

Enclosure

pc: Vic Copelan - DEM, WRO (w/encl)
Mike Aldridge - DEM, Raleigh (w/encl)
W. T. Cooper (w/encl)
J. D. Robinson (w/encl)
J. C. Carrere (w/encl)
00-12-000 (w/o encl)
15-009-006 (w/encl)

**SOURCE PERFORMANCE TEST
SULFURIC ACID PLANT NUMBER 5**

TEXASGULF INC.

PHOSPHATE OPERATIONS

AURORA, NC

OCTOBER 22 AND 23, 1991

PREPARED BY:

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

11/14/91

REVIEWED BY:

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

REVIEWED BY:

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

REVIEWED BY:

**BRAD A. PEACOCK
SR. ENV. ENGINEER**

TEXASGULF INC. PHOSPHATE OPERATIONS

Summary

On October 22 and 23, 1991 sampling and analyses were conducted on Sulfuric Acid Plant No. 5 to determine the Sulfuric Acid Mist and Sulfur Dioxide Emission rates using EPA approved Method 8.

Senior Environmental Technicians Jimmy Hardy and Ted Davis performed the stack sampling. Senior Environmental Technician Phillip Forest performed the workdown and 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 0.043 pounds per ton of product. The Sulfur Dioxide emission rate was shown to be 3.84 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 5 is operating within the specifications set forth by the Code of Federal Regulations. A total of 4 stack samples were taken. Run 2 was voided due to a failed leak check occurring at the end of axis one.

EPA Method 9 Stack Opacity Measurements are included in the report.

TEXASGULF INC. PHOSPHATE OPERATIONS

Test Summary - Sulfuric Acid Plant Number 5

EPA Method 8 - Source Performance Test

	Run 1 10/22/91	Run 2 10/22/91	Run 3 10/23/91
Stack Volume Flow Rate, SCFM	153,786	159,838	158,762
Sample Volume, DSCF	55.36	57.16	56.73
Production Rate, TPD @ 100% H ₂ SO ₄	3201	3190	3251
H ₂ SO ₄ Mist mg/DSCF	0.25	0.30	0.29
H ₂ SO ₄ Mist Emission Rate, #'s/Ton of Product	0.037	0.047	0.044
Stack Test Sulfur Dioxide, % by Volume	0.0355	0.0332	0.0362
Sulfur Dioxide mg/DSCF	25.06	23.45	25.56
Stack Test Lbs SO ₂ /Ton of Product	3.82	3.73	3.96
Isokinetic Rate	101.2	100.6	100.5
Average Lbs of Mist/Ton of Product (3 runs)	0.043		
Average Lbs of SO ₂ /Ton of Product (3 runs)	3.84		

Note: All emission rates based on 100% H₂SO₄ production.

TEXASGULF INC. PHOSPHATE OPERATIONS

Sulfuric Acid Plant No. 5

Stack Data Summary

Date	Time	Run #	Velocity FPS	Stack Volume FT3/Min	Temp (oF)
10/22/91	11:25	1	34.062	153,786	156
10/22/91	15:25	2	35.633	159,838	159
10/23/91	09:54	3	35.351	158,762	159

Note: All results are in dry standard feet.

TEXASGULF memo

Date: 11/14/91
To: Sulfuric Acid Department Superintendent
From: Environmental Affairs
Subject: EPA Method 8 Source Performance Test: Sulfuric No. 5
Run 1

Sample Date	Time	
10/22/91	11:25	
Production Rate TPD @100% H ₂ SO ₄	Stack Volume	
3201	153,786	
Mg Mist/SCF	Lbs of Mist/Ton of Product	
0.25	0.037	
Mg SO ₂ /SCF	%SO ₂ by Volume	Lbs of SO ₂ /Ton of Product
25.06	0.0355	3.82

State and Federal emission limits for Number Three Sulfuric Acid Plant are 4 pounds of Sulfur Dioxide/Ton of Product and 0.15 pounds of Sulfuric Acid Mist/Ton of Product.

M. L. Ashley
Supervisor, Environmental Laboratory File: ec-15-09-006

The stack sample was taken isokinetically according to EPA Method 8. The isokinetic sampling rate was 101.23 %.

TEXASGULF INC. PHOSPHATE OPERATIONS

Method 8 Source Performance Test

Run 1

Sulfuric Acid Plant #5

Rpt. Date 10/29/91

Smple Date 10/22/91

Smple Time 11:25

Initial DGM Final DGM

Barometric Pressure	30.37	941.901	970.723	
Stack Static Pressure	-0.48	971.100	999.937	57.659
Stack Diameter	126	Dry Gas Factor		0.9930
Nozzle Diameter	0.2425	Dry Mole Wt Stk Gas		28.32
Pitot Tube Corr	0.84	Stack Pressure		30.33
Sampling Time in Minutes	96			

Production Rate

		1130	1230	1330
Acid Strength % (AVG)	95.28	95.12	95.27	95.44
Sp. Gr. @21 oC	1.829			
Lbs. Acid/Gal	14.53			

Prod TPD @100% H2SO4 3201.0

	Stk oF	Delta P	Delta H	oF In	oF Out
Pt 1	152	0.24	0.80	88	82
Pt 2	157	0.24	0.80	94	82
Pt 3	157	0.24	0.80	98	81
Pt 4	157	0.28	0.93	100	82
Pt 5	157	0.20	0.67	102	83
Pt 6	158	0.18	0.60	102	84
Pt 7	157	0.40	1.33	106	85
Pt 8	158	0.36	1.20	106	85
Pt 9	157	0.45	1.50	107	86
Pt 10	157	0.55	1.83	108	87
Pt 11	157	0.50	1.67	107	88
Pt 12	146	0.25	0.83	107	88
Pt 13	154	0.38	1.27	93	87
Pt 14	157	0.30	1.00	100	86
Pt 15	157	0.34	1.13	104	87
Pt 16	157	0.40	1.33	106	87
Pt 17	157	0.34	1.13	108	88
Pt 18	158	0.30	1.00	108	89
Pt 19	159	0.28	0.93	109	90
Pt 20	158	0.38	1.27	111	90
Pt 21	158	0.34	1.13	111	91
Pt 22	159	0.26	0.87	111	93
Pt 23	157	0.30	1.00	112	93
Pt 24	143	0.18	0.60	111	93