

tasgulf Inc.
group

48 Aurora, North Carolina 27806

January 9, 1992

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

Mr. Jim Mulligan
Regional Supervisor
Division of Environmental Management
N. C. Department of EHNR
P. O. Box 1507
Washington, North Carolina 27889

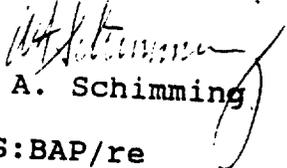
Re: **Texasgulf Inc.**
Permit No. 4492R5

Dear Jim:

As per the requirements of Air Quality Permit No. 4492R5, Performance Testing No. 10. TESTING REQUIREMENT, the Diammonium Phosphate Plant No. 2 has been compliance tested for particulate emissions. 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

WAS:BAP/re

Enclosure

pc: Mike Aldridge - DEM, Raleigh (w/encl)
W. T. Cooper (w/encl)
W. K. Thornton/S. A. Miller (w/encl)
J. C. Carrere (w/encl)
00-12-000 (w/o encl)
15-09-018 (w/encl)

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SOURCE PERFORMANCE TEST
DIAMMONIUM PHOSPHATE PLANT NO. 2
TEXASGULF INC.
PHOSPHATE OPERATIONS
AURORA, NC
DECEMBER 19 AND 20, 1991

PREPARED BY:

JOHN C. CARRERE, JR.
ENV. DATA COORDINATOR

12/30/91

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 December 19 and 20, 1991 sampling and analyses were conducted to determine the particulate emissions using EPA approved Method 5: Determination of Particulate Emissions from Stationary Sources, on Diammonium Phosphate Plant No. 2. The testing indicated a particulate matter emission rate of 18.89 pounds/hour. The average allowable particulate emission rate for the testing was 63.20 pounds per hour.

Senior Environmental Technician Phillip Forest and Environmental Technician Jack Taylor performed the stack sampling. Senior Environmental Technician Jimmy Hardy performed the workdown and analyses.

The normal (average) production rate since the last Source Performance Test (11/15/90) was 832 Tons of P₂O₅ Input/Day. The average production rate during the testing was 831 Tons of P₂O₅ Input/Day. Due to the average Tons of P₂O₅ Input/Day being one ton/day below the normal (average) production rate, Don Wynne of the North Carolina Division of Environmental Management was contacted. Mr. Wynne approved the variance.

No observer from DEM was present due to scheduling problems.

TEXASGULF INC. PHOSPHATE OPERATIONS

Test Summary - Method 5 Compliance DAP 2

	12/19/91 Run 1	12/19/91 Run 2	12/20/91 Run 3
Stack Volumetric Flow Rate, TSCFM	152,633	150,171	154,847
Sample Volume, DSCF	39.22	38.36	40.03
Particulate mg/DSCF	1.32	1.08	1.24
Particulate Emission Rate, Lbs./Hr.	20.65	16.50	19.53
Percent Isokinetic Sampling Rate	98.35	98.99	99.85
Avg Particulate Emission Rate, Lbs/Hr.			18.89
Allowable Emission Rate, Lbs. Particulate/Hour	62.94	63.34	63.32
Calculated Tons of P2O5 Input/Day	757	872	863
Average Tons of P2O5 Input/Day for Test			831
Normal Production Rate in Tons of P2O5 Input/Day Since Last *			832
Permitted Tons of P2O5 Input/Day			1045
% of Test Production Rate vs Permitted Production Rate			79

* Last Source Performance 11/15/90

TEXASGULF INC. PHOSPHATE OPERATIONS

Production Information

DAP No. 2 Method 5 Compliance Test

12/19/91 & 12/20/91

	<u>Run 1</u>	<u>Run 2</u>	<u>Run 3</u>
% P2O5 54 Acid	53.07	53.16	52.10
Sp. Gr. 54 Acid	1.699	1.706	1.705
G.P.H. 54 Acid	4271	4261	4677
% P2O5 30 Acid	28.52	28.83	27.67
Sp. Gr. 30 Acid	1.299	1.303	1.287
G.P.H. 30 Acid	10016	12914	12547
TPA of Product	46.67	46.67	46.36
Production Rate T.P.D.	1621	1869	1861
P2O5 Input, T.P.D.	757	872	863

TEXASGULF INC. PHOSPHATE OPERATIONS

Calculations

- 1) $P2O5 \text{ Input Tons/Day} = (8.34 \times D \times E \times F \times 60 \times 24) / 2000$
- 2) $Mg \text{ Particulate/DSCF} = (H / A)$
- 3) $Mg \text{ Particulate/TSCF} = (H / B)$
- 4) $Lbs. \text{ Particulate/Day} = (I \times C \times 60) / 1000 / 453.59$
- 5) $Lbs. \text{ Particulate/Hour} = (J / 24)$
- 6) $Lbs. \text{ Particulate/Ton of } P2O5 \text{ Input} = (J / G)$
- 7) $\text{Production Rate DAP Tons/Day} = (G / M)$
- 8) $\text{Allowable Lbs. Particulate/Hour} = (((K / 24) + L)^{.3067}) \times 9.377$

A =	Gas Sample Volume DSCF
B =	Gas Sample Volume TSCF
C =	Volumetric Flow Rate of Stack, SCFM
D =	Specific Gravity of Feed Acid
E =	% P2O5 of Feed Acid
F =	Acid Feed G.P.M.
G =	P2O5 Input Tons/Day
H =	Net Sample Weight
I =	Mg Particulate TSCF
J =	Pounds of Particulate/Day
K =	Production Rate DAP Tons/Day
L =	Recycle Rate of 429 TPH provided by Fertilizer Plants Engineer
M =	TPA of Product

TEXASGULF memo

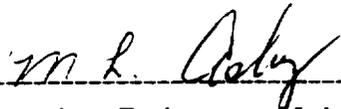
Date: 12/30/91
To: Fertilizer Superintendent
From: Environmental Affairs
Subject: EPA Method 5 Sample: DAP 2
Compliance Test: Run 1

Sample Date	Time	Production Rate DAP TPD
12/19/91	15:04	1621

Mg Particulate/SCF	Stack Volumetric Flow Rate TSCFM
Dry 1.32	152,633
Total 1.02	

Lbs. Particulate/Hr.	Lbs. Particulate/Ton of Product
20.65	0.31

62.94 Lbs/Hour is the allowable particulate emission rate at this production rate.



Supervisor, Environmental Laboratory

File: ec-15-09-018

The stack sample was taken isokinetically according to EPA Method 5. The isokinetic sampling rate was 98.35 %.

TEXASGULF INC. PHOSPHATE OPERATIONS

SOURCE PERFORMANCE TEST

Method 5 Compliance Test
Run 1
DAP 2

Rpt. Date 12/30/91
Smple Date 12/19/91
Smple Time 15:04

Barometric Pressure	30.74	Initial Dry Gas Mtr	600.802
Stack Static Pressure	-1.10	Final Dry Gas Mtr	641.765
Stack Diameter	84	Dry Gas Factor	0.9858
Nozzle Diameter	0.1993	Dry Mole Wt Stk Gas	28.854
Pitot Tube Corr	0.84	Stack Pressure	30.66
Sampling Time in Minutes	60		

30% Acid Analyses		54% Acid Analyses	
T.P.A. Decimal Equiv.	0.2852	T.P.A. Decimal Equiv.	0.5307

Sp. Gr. at 140 oF	1.299	Sp. Gr. at 140 oF	1.699
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30% Acid Production		54% Acid Production	
15:00 30% Acid Reading	35726134	15:00 54% Acid Reading	11897738
16:00 30% Acid Reading	35736150	16:00 54% Acid Reading	11902009
Minutes Between Reads	60		
Gallons per minute 30%	166.93	Gallons per minute 54%	71.18

30% Acid P2O5 Inpt TPD	371.36	54% Acid P2O5 Inpt TPD	385.37
Total P2O5 Input TPD	756.73	Production Tons DAP	1621.46
TPA of Product	46.67		

	Pt	Stk oF	Delta P	Delta H	oF In	oF Out
	1	158	1.00	0.98	109	91
	2	162	1.25	1.23	112	92
	3	162	1.40	1.38	114	94
	4	160	2.00	1.97	115	95
	5	161	1.95	1.92	114	96
	6	161	1.65	1.62	114	96
	7	158	1.00	0.98	100	93
	8	162	1.25	1.23	102	91
	9	160	1.10	1.08	104	90
	10	160	2.00	1.97	106	90
	11	161	1.50	1.47	107	90
	12	161	1.60	1.57	107	90

Averages	161	1.48	1.45	109	92
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Stack oR	621	Average Meter Temp oR	561
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Method 5

DAP 2

Run 1

12/19/91

Gas Volume Collected	40.963
Corrected Gas Volume	40.381
Gas Volume STP	39.218

Impinger Volumes/Weights

	No. 1 (mls) (water)	No. 2 (mls) (water)	No. 3 (mls) (water)	No. 4 (g) (silica gel)
Initial	100	100	0	637.92
Final	280	151	4	646.90

Totals mls of water collected	235
Increase in grams of silica gel	8.98
Total Gas Volume	50.703
Bws	0.2265
One - Bws	0.7735
Wet Molecular Weight of Stack Gas	26.40

Stack Pressure	30.66
Stack Velocity FPS	75.809
Stack Velocity Standard Ft ³ /Min	152633

Particulate Calculations

Final Beaker Weight	173.5062
Tare Beaker Weight	173.4888
Final Filter Weight	0.5623
Tare Weight of Filter	0.5278
Net Sample Weight	0.0519
Mg Particulate/DSCF	1.3221
Mg Particulate/TSCF	1.0226
Lbs Particulate/Day	495.52
Lbs Particulate/Hr	20.65
Lbs Particulate/Ton of Product	0.3056

Isokinetic Sampling Rate	98.35
Allow. Emission lb/hr.	62.94

TEXASGULF memo

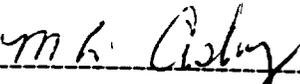
Date: 12/30/91
To: Fertilizer Superintendent
From: Environmental Affairs
Subject: EPA Method 5 Sample: DAP 2
Compliance Test: Run 2

Sample Date	Time	Production Rate DAP TPD
12/19/91	16:35	1869

Mg Particulate/SCF	Stack Volumetric Flow Rate TSCFM
Dry 1.08	150,171
Total 0.83	

Lbs. Particulate/Hr.	Lbs. Particulate/Ton of Product
16.50	0.21

63.34 Lbs/Hour is the allowable particulate emission rate at this production rate.



Supervisor, Environmental Laboratory

File: ec-15-09-018

The stack sample was taken isokinetically according to EPA Method 5. The isokinetic sampling rate was 98.99 %.

TEXASGULF INC. PHOSPHATE OPERATIONS

SOURCE PERFORMANCE TEST

Method 5 Compliance Test	Rpt. Date	12/30/91			
Run 2	Smple Date	12/19/91			
DAP 2	Smple Time	16:35			
Barometric Pressure	30.74	Initial Dry Gas Mtr		649.408	
Stack Static Pressure	-1.10	Final Dry Gas Mtr		689.406	
Stack Diameter	84	Dry Gas Factor		0.9858	
Nozzle Diameter	0.1982	Dry Mole Wt Stk Gas		28.854	
Pitot Tube Corr	0.84	Stack Pressure		30.66	
Sampling Time in Minutes	60				
30% Acid Analyses		54% Acid Analyses			
T.P.A. Decimal Equiv.	0.2883	T.P.A. Decimal Equiv.		0.5316	
Sp. Gr. at 140 oF	1.303	Sp. Gr. at 140 oF		1.706	
30% Acid Production		54% Acid Production			
16:00 30% Acid Reading	35736150	16:00 54% Acid Reading		11902009	
17:45 30% Acid Reading	35758749	17:45 54% Acid Reading		11909466	
Minutes Between Reads	105				
Gallons per minute 30%	215.23	Gallons per minute 54%		71.02	
30% Acid P2O5 Inpt TPD	485.44	54% Acid P2O5 Inpt TPD		386.66	
Total P2O5 Input TPD	872.10	Production Tons DAP		1868.65	
TPA of Product	46.67				
	Stk oF	Delta P	Delta H	oF In	oF Out
Pt 1	158	1.00	0.97	100	89
Pt 2	161	1.20	1.16	105	88
Pt 3	162	1.35	1.31	108	89
Pt 4	162	1.95	1.89	109	90
Pt 5	162	1.90	1.84	110	91
Pt 6	162	1.45	1.40	110	91
Pt 7	159	0.95	0.92	102	91
Pt 8	162	1.25	1.21	106	91
Pt 9	163	1.30	1.26	109	92
Pt 10	163	1.50	1.45	110	93
Pt 11	163	1.65	1.60	110	94
Pt 12	162	1.60	1.55	112	96
Averages	162	1.43	1.38	108	91
Stack oR	622		Average Meter Temp oR		559

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Method 5

DAP 2

Run 2

12/19/91

Gas Volume Collected	39.998
Corrected Gas Volume	39.430
Gas Volume STP	38.362

Impinger Volumes/Weights

	No. 1 (mls) (water)	No. 2 (mls) (water)	No. 3 (mls) (water)	No. 4 (g) (silica gel)
Initial	100	100	0	630.05
Final	290	140	2	638.02

Totals mls of water collected	232
Increase in grams of silica gel	7.97
Total Gas Volume	49.658
Bws	0.2275
One - Bws	0.7725
Wet Molecular Weight of Stack Gas	26.38

Stack Pressure	30.66
Stack Velocity FPS	74.717
Stack Velocity Standard Ft3/Min	150171

Particulate Calculations

Final Beaker Weight	159.6089
Tare Beaker Weight	159.5888
Final Filter Weight	0.5696
Tare Weight of Filter	0.5485
Net Sample Weight	0.0413
Mg Particulate/DSCF	1.0753
Mg Particulate/TSCF	0.8307
Lbs Particulate/Day	396.02
Lbs Particulate/Hr	16.50
Lbs Particulate/Ton of Product	0.2119

Isokinetic Sampling Rate	98.99
Allow. Emission lb/hr.	63.34