EMS Laboratories
117 W. Bellevue Drive
Pasadena, CA 91105

NARRATIVE

August 2, 2010

Derrick Willis
Tronox LLC-Henderson
560 West Lake Mead
Henderson, NV 89015

SDG/EMS# 137821
Project: 2027.01, Tronox LLC Henderson,
560 West Lake Mead Drive, Henderson, NV
Client COC ID: 02027.01.2126

REFERENCE:	DAS Case No. 0769F	TDD No.: 07-10-0012
	Task No. 0361	P. O. No.: 0063941
	Tronox Project# 2027.01	NGE Tracking# 03
	AUI Task# 6	

EMS REPORT NO.: 137821

When the samples are analyzed in the TEM the recorded data includes the dimensions of the respirable fibers of the regulated asbestos types, namely, chrysotile, Amosite (cummingtonite/grunerite), tremolite, actinolite, crocidolite, and anthophylite. The fibers of importance are those included in the protocol fiber classification. The width of the protocol fibers is <0.4 um and the length is divided into two groups, 5 to 10 um and long fibers >10 um. The 95% Poisson Confidence interval for the observed concentration of fibers is also calculated. Other asbestos fibers and non-asbestos fibers with protocol dimensions are noted in the counting sheet. The problem regarding the loss of particles on polycarbonate filters has been eliminated except for very alkaline particles. There is no evidence that asbestos fibers are lost.

Samples SSA7-03-0.00BPC and its field duplicate show a slight difference in asbestos fiber count for short chrysotile fibers but the difference is small and probably not statistically significant.

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Attn: Derrick Wills
Tronox-LLC-Henderson
PO Box 55
Henderson, NV 89009

Phone: (947) 375-7004

Project: Tronox LLX Henderson, 560 W. Lake Mead Dr., Henderson, NV/2027.001

Customer ID: TRNX26
Customer PO: 2027.001
Received: 5/19/2010 10:05AM
EMS LAB No: 137821
Date Prepared: 6/16/2010 11:42AM
Analysis Date: 6/23/2010 0:00
Report Date:

Date Sampled: 5/12/2010 1:05PM

NIOSH 7402/ISO

DRAFT, MODIFIED ELUTRIATOR METHOD FOR THE DETERMINATION OF ASBESTOS IN SOILS AND BULK MATERIAL METHOD

EMS Laboratory Number:	137821		Mass of Respirable Dust on Fiber:	172	µg
Customer Sample Number:	SSAP8-01-0.00BPC		Area of collection filter:	385	mm^2
Minimum Level of Analysis (chrysotile):	CD		Grid openings area:	0.0094	mm^2
Minimum Level of Analysis (amphibole):	ADX		Grid Openings Analyzed:	91	
Magnification used for fiber counting:	9,200	x	Min. Str. Length/Max Str. Diameter:	>5/<0.4	microns
Aspect ratio for fiber definition:	3:1				
			Analyst(s):	Radha Singh	

Dust Generator - Total Dried Sample Weight-76.8g	Soil % Moisture	4.6	%
	Air Flow Rate Through ME Opening of Dust Generator:	1370	
Not Used	Air Flow Rate Through IST Opening of Dust Generator:	130	
Used in Tumbler	Estimate Total Air Flow Through Elutriator:	1500	

Analytical Sensitivity:	2.62E+06 Structure /g PM 10	Limit of Detection:	7.84E+06 Structure /g PM 10

Test For Uniformity (Chi-Square results)

		Counts		Poisson 95% Confidence Interval			
Structure Class	**Min ID Level Required**	**Primary Str.**	**Total Str.**	**Density** St/mm^2	**Conc.** Str/g PM10	**Lower Limit** Str/g PM10	**Upper Limit** Str/g PM10
Asbestos Structures>5um, ≤10um	ADX/CD	0	0	0	0	0	7.84E+06
Asbestos Structures>5um, ≤10um (Chrys)	CD	0	0	0	0	0	7.84E+06
Asbestos Structures>5um, ≤10um (Amph)	ADX	0	0	0	0	0	7.84E+06
Asbestos Structure >10um (Long)	ADX/CD	0	0	0	0	0	7.84E+06
Asbestos Structure >10um (Chrys)	CD	0	0	0	0	0	7.84E+06
Asbestos Structure >10um (Amph)	ADX	0	0	0	0	0	7.84E+06
Total Protocol Asbestos Structures	ADX/CD	0	0	0	0	0	7.84E+06
Protocol Asbestos Structures (Chrys)	CD	0	0	0	0	0	7.84E+06
Protocol Asbestos Structures (Amph)	ADX	0	0	0	0	0	7.84E+06
Total Protocol Non Asbestos Structures	**NAM**	1	1	1.2	2.62E+06	6.60E+04	4.37E+07

Approved by Technical Director

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NIOSH 7402/ISO

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Client:	Derrick Willis, Tronox LLC-Henderson	**Filter Type:**	MCE 385 mm^2
Report number :	137821	**Magnification:**	9200
Sample number:	SSAP8-01-0.00BPC	**Grid Opening Dimension: mm^2**	0.0094
Project:	2027.001/Tronox LLC Henderson, 560 W. Lake Mead Dr.,	**Grid Loading:**	Moderate

Elutriation Date: 6/16/2010 by Joel Paruli
Preparation Date: 6/18/2010 by Joel Paruli
Analysis Date: 6/23/2010 by Rahda Singh

Asbestos Structures>5um, ≤10um (Chrys)	0	**Grid Openings**	91
Asbestos Structures>5um, ≤10um (Amph)	0	**Mass - ug**	172
Asbestos Structure >10um (Chrys)	0	**Anlytical sensitivity**	[illegible]
Asbestos Structure >10um (Amph)	0		
Protocol Asbestos Structures (Chrys)	0		
Protocol Asbestos Structures (Amph)	0		

Grid ID	Grid Opening	Structure Type	Structure Number		Dimensions - mm		Dimensions (µm)		Level of ID	Mineral Type	Image Number	Structure Comments
			Primary	Total	Width	Length	Width	Length				
1A	C23	None Detected										
1A	E26	F			1.5	75	0.16	8.15				Non Asbestos
1A	F26	None Detected										
1A	G26	None Detected										
1A	G31	None Detected										
1A	G34	None Detected										
1A	H31	None Detected										
1A	H34	None Detected										
1A	C36	None Detected										
1A	E33	None Detected										
1A	E36	None Detected										
1A	F36	None Detected										
1A	H33	None Detected										
1A	H36	None Detected										
1A	G44	None Detected										
1A	H41	None Detected										
1A	H51	None Detected										
1A	H56	None Detected										
1A	E56	None Detected										
1B	C23	None Detected										
1B	C26	None Detected										
1B	E23	None Detected										
1B	E26	None Detected										
1B	F23	None Detected										
1B	H23	None Detected										
1B	C31	None Detected										
1B	C34	None Detected										
1B	F34	None Detected										
1B	G31	None Detected										
1B	G34	None Detected										
1B	F36	None Detected										
1B	G33	None Detected										
1B	G41	None Detected										
1B	G46	None Detected										
1B	H41	None Detected										
1B	F54	None Detected										
1B	G51	None Detected										
1B	G54	MD11			70	90	7.61	9.78				Non Asbestos
		MF			1.5	60	0.16	6.52				Non Asbestos
1C	E31	None Detected										
1C	E34	None Detected										
1C	F31	None Detected										
1C	F34	None Detected										

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Report Number:	
Sample number:	

Analyzed by:	
Date of Analysis:	

Grid ID	Grid Opening	Structure Type	Structure Number				Dimensions (µm)		Level of ID	Mineral Type	Image Number	Structure Comments
			Primary	Total			Width	Length				
1C	G23	None Detected										
1C	H23	None Detected										
1C	C33	None Detected										
1C	C36	None Detected										
1C	C44	None Detected										
1C	E41	None Detected										
1C	F41	None Detected										
1C	G41	None Detected										
1C	G44	None Detected										
1C	G51	None Detected										
1C	G54	None Detected										
1C	B54	None Detected										
1C	B44	None Detected										
1C	B36	None Detected										
1D	E23	None Detected										
1D	E26	None Detected										
1D	F23	None Detected										
1D	F26	None Detected										
1D	B34	None Detected										
1D	C31	None Detected										
1D	C34	None Detected										
1D	E31	None Detected										
1D	C33	None Detected										
1D	C36	None Detected										
1D	E33	None Detected										
1D	C41	None Detected										
1D	C44	None Detected										
1D	F41	None Detected										
1D	F44	None Detected										
1D	E51	None Detected										
1D	E54	None Detected										
1D	F51	None Detected										
1E	C23	None Detected										
1E	C26	None Detected										
1E	E31	None Detected										
1E	E34	None Detected										
1E	E33	None Detected										
1E	F36	None Detected										
1E	G33	None Detected										
1E	G36	None Detected										
1E	H33	F		2	100		0.22	10.87				Non Asbestos
1E	G41	None Detected										
1E	G44	None Detected										
1E	H41	None Detected										
1E	H44	None Detected										
1E	E54	None Detected										
1E	F51	None Detected										
1E	F54	None Detected										
1E	G51	None Detected										

Elutriator Data

Date: 6/16/10 Client: Northgate

Lab #: 137821

Sample ID: SSAP 8-01-0.00 BPC Sample weight (g): 76.8

Time air flow started: ~~745~~ 745 Tumbler rpm: 45

IST Flowmeter (mL/min): 130 ME Flowmeter (mL/min): 1370

Filter No.	Start Time	Tested flow rate (mL/min)	Final Filter Wt (mg)	Initial Filter Wt (mg)	Dust Weight (mg)	Time Value (min)	Avg. rate of deposition (ug/min)	Optimal time (min)
1	945	130	0.04894	0.02494	24.00	30		
2	1015		0.03045	0.02986	5.59	20		
3	1035		0.03387	0.02499	8.88	20		
4	1055		0.02975	0.02497	4.78	20		
5	1115		0.03054	0.02495	5.59	20		
6	1135		0.02787	0.02471	3.16	25		
7	1200							
8								

* blown out, No good.

blown out 30%

blown out 60%

Polycarbonate Filters

START	Time						Dep. Rate	Estiimate
-1	1103	1089 1/2			4.347		5 1/2	
-2	1121	1131			4.396		10	
-3	1142	1158			4.437	172	16	
-4	1209	1225			4.392		16	
-5							~~40~~	
-4								
-7								
-8								

Prep 6/18/10

Elutriator Data

Date: 6/17/10 Client: Northgate

Lab #: 137821

Sample ID: SSAP8-01-0.00 BPC-FD Sample weight (g): 77.7

Time air flow started: 800 Tumbler rpm: 30

IST Flowmeter (mL/min): 130 ME Flowmeter (mL/min): 1370

Filter No.	Start Time	Tested flow rate (mL/min)	Final Filter Wt (mg)	Initial Filter Wt (mg)	Dust Weight (mg)	Time Value (min)	Avg. rate of deposition (ug/min)	Optimal time (min)
1	1000	139	0.03040	0.02499	11.41	30		
2	1030		0.02930	0.02498	4.32	20		
3	1050		0.03172	0.02494	6.78	25		
4	1115		0.03093	0.02496	5.97	25		
5	1140		0.02949	0.02489	4.60	25		
6	1205							
7								
8								
Polycarbonate Filters								
Time							Dep. Rate	Estiimate
-1 1057	1109			4.447		12		
-2 1121	1134			4.509		13		
-3 1146	1156			4.421	153	10		
-4 1211	1222			4.388		11		
-5								
-6								
-7								
-8								

prog: 6/18/10

138821 Moisure content

6-7-10

#SSAP8-01-00 BPC
dish. wt. 19.25g
sample wt: 119.21g - 19.25 = 99.96g (initial wt.)
at 6:20Am - 7:20 - 114.88 - 19.25 = 95.63g
8:05 - 9:05 - 114.86 - 19.25 = 95.61g (Final wt.)

% moisture → $100 \times \frac{(99.96 - 95.61)}{95.61g} = 4.55\%$

#SSAN7-03-0.00BPC-FD
dish wt. 31.48g
sample wt. 131.92 - 31.48 = 100.44g (initial wt.)
8:50 - 9:50 129.19 - 31.48 = 97.71g
10:30 - 11:30 128.88 - 31.48 = 97.40
12:30 - 1:30 128.87 - 31.48 = 97.39

% moisture → $100 \times \frac{100.44 - 97.39}{97.39} = 3.13\%$

#SSAN7-03-0.00BPC
dish wt. 31.46g
sample wt. 131.89 - 31.46g = 100.43g (initial wt.)
8:50 - 9:50 128.96 - 31.48 = 97.50g
10:30 - 11:30 128.88 - 31.46 = 91.42g
12:30 - 1:30 128.84 - 31.46 = 91.38g

% Moisture → $100 \times \frac{100.43 - 91.38}{91.38} = 3.13\%$

BP

Copy

START PREP: 900 1130 AM & STOP

Count (Page of) NIOSH 7402/ISO

PC

Report number : 137821
Sample number: SSAPS-01-0.00 BPC
File name: Northgate
Sample Description: 172 mg

Filter Type: ~~MCE~~ PC 385 mm2
Date Sample was Run: 6/16/10

Magnification: 9,200 X

Preparation date: 5/18/10 By JAP
Analysis date: 6/23/10 By RS
(A): ADX, ADQ

Grid opening dimension:0.0094 mm^2
Level of Analysis: (C): CD, CDX

Grid loading Moderate Condition of Grid

93 EV
81

12 to 2:30 PM

Grid	Grid Opening	Number of structures Primary	Number of structures Total	Class	Type of Structure	Width mm	Length mm	Comments
1A	C2-3							
	E2-4				12	1.5	7.5	Non asb.
	E2-6							
	L2-6							
	L3-1							
	L3-4							
	B3-1							
	B3-4							
	C3-6							
	E3-3							
	E3-6							
	E3-6							
	B3-3							
	B3-9							
	L4-4							
	B4-1							
	B4-1							
	G1-6							
1A	E5-6							
1B	C2-3							
	C2-6							
	E2-3							
	E2-6							
	E2-3							
	B2-3							
	C3-1							
	C3-4							
	E3-4							
	L3-1							

TEM Asbestos Structure Count (Page of)

Report number: 137821 SAMPLE NO: SSAP8-01-0.00 BPC X 9,200

Grid	Grid Opening	Number of structures primary	Number of structures Total	Class	Type of Structure	Width Mm	Length Mm	Comments
	G3-4							
	E3-6							
	G3-3							
	G4-1							
	H4-1							
	I+4-1							
	E5-4							
	G5-1							
14	D5-4				MDID	70	90	Nanash
					MI	1.5	60	
16	E3-							
	E3-4							
	E3-1							
	E3 4							
	G2-3							
	H2 3							
	I 3 3							
	C3-6							
	C4-4							
	E4-1							
	F4-1							
	G4-1							
	G4-4							
	G5-1							
	G5-4							
	B5-4							
	B4-4							
	B3-6							
10	E2 3							
	E2-6							
	F2 3							
	F2-6							
	B3-4							

TEM Asbestos Structure Count (Page of)

Report number: 137821 SAMPLE NO: SSAP8-01-0.00 BPC X 9,200

Grid	Grid Opening	Number of structures primary	Number of structures Total	Class	Type of Structure	Width Mm	Length Mm	Comments
	C3-1							
	C3-4							
	E3-							
	C3-3							
	C3-6							
	E3-3							
	C4-1							
	C4-4							
	E4-1							
	E4-4							
	E5-1							
	E5-4							
	E-5-1							
1E	C23							
	C26							
	E3-1							
	E3-4							
	E3-3							
	E3-6							
	G3-3							
	G3-6							
	H33				E	2	TW	Non asb.
	G4-1							
	G4-4							
	H4-1							
	H4-4							
	E5-1							
	E5-							
	K5-4							
	G5-1							

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PO Box 55
Henderson, NV 89009

Phone: (947) 375-7004

Project: Tronox LLX Henderson, 560 W. Lake Mead Dr., Henderson, NV/2027.001

Date Sampled: 5/12/2010 12:26pm

Customer ID: TRNX26
Customer PO: 2027.001
Received: 5/19/2010 10:05AM
EMS LAB No: 137821
Date Prepared: 6/28/2010 2:55PM
Analysis Date: 6/29-30/10 1:00PM

Report Date:

NIOSH 7402/ISO

DRAFT, MODIFIED ELUTRIATOR METHOD FOR THE DETERMINATION OF ASBESTOS IN SOILS AND BULK MATERIAL METHOD

EMS Laboratory Number:	137821		Mass of Respirable Dust on Fiber:	168	µg
Customer Sample Number:	SSAN7-03-0.00BPC_FD		Area of collection filter:	385	mm^2
Minimum Level of Analysis (chrysotile):	CD		Grid openings area:	0.0094	mm^2
Minimum Level of Analysis (amphibole):	ADX		Grid Openings Analyzed:	99	
Magnification used for fiber counting:	9,200	x	Min. Str. Length/Max Str. Diameter:	>5/<0.4	microns
Aspect ratio for fiber definition:	3:1				
			Analyst(s):	Radha Singh	

Dust Generator - Total Dried Sample Weight-78.1g
Soil % Moisture 3.1 %

Not Used
Used in Tumbler

Air Flow Rate Through ME Opening of Dust Generator: 1370
Air Flow Rate Through IST Opening of Dust Generator: 103
Estimate Total Air Flow Through Elutriator: 1473

Analytical Sensitivity: 2.46E+00 Structure /g PM 10
Limit of Detection: 7.38E+00 Structure /g PM 10

Test For Uniformity (Chi-Square results)

(Note: Amended report per client request to reflect the EPA definition of greater than 10um and less than 0.4um)

Structure Class	Min ID Level Required	Counts Primary Str.	Counts Total Str.	Density St/mm^2	Conc. Str/g PM10	Poisson 95% Confidence Interval Lower Limit Str/g PM10	Poisson 95% Confidence Interval Upper Limit Str/g PM10
Asbestos Structures>5um, ≤10um	ADX/CD	0	0	0	0	0	7.38E+00
Asbestos Structures>5um, ≤10um (Chrys)	CD	0	0	0	0	0	7.38E+00
Asbestos Structures>5um, ≤10um (Amph)	ADX	0	0	0	0	0	7.38E+00
Asbestos Structure >10um (Long)	ADX/CD	0	0	0	0	0	7.38E+00
Asbestos Structure >10um (Chrys)	CD	0	0	0	0	0	7.38E+00
Asbestos Structure >10um (Amph)	ADX	0	0	0	0	0	7.38E+00
Total Protocol Asbestos Structures	ADX/CD	0	0	0	0	0	7.38E+00
Protocol Asbestos Structures (Chrys)	CD	0	0	0	0	0	7.38E+00
Protocol Asbestos Structures (Amph)	ADX	0	0	0	0	0	7.38E+00
Total Protocol Non Asbestos Structures	NAM	0	0	0	0	0	7.38E+00

Approved by Technical Director

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Client:	Derrick Willis, Tronox LLC-Henderson	**Filter Type:**	PC
Report number :	137821	**Magnification:**	9200
Sample number:	SSAN7-03-0.00BPC_FD	**Grid Opening Dimension: mm^2**	0.0094
Project:	2027.001/Tronox LLC Henderson, 560 W. Lake Mead Dr.,	**Grid Loading:** Moderate	

Elutriation Date: 6/28/2010 by Joel Paruli
Preparation Date: 6/29/2010 by Joel Paruli
Analysis Date: 6/29-30/10 by Radha Singh

Asbestos Structures>5um, ≤10um (Chrys)	0
Asbestos Structures>5um, ≤10um (Amph)	0
Asbestos Structure >10um (Chrys)	0
Asbestos Structure >10um (Amph)	0
Protocol Asbestos Structures (Chrys)	0
Protocol Asbestos Structures (Amph)	0

Grid Openings	99
Mass - ug	168
Anlytical sensitivity	[redacted]

Grid ID	Grid Opening	Structure Type	Structure Number Primary	Structure Number Total	Dimensions - mm Width	Dimensions - mm Length	Dimensions (µm) Width	Dimensions (µm) Length	Level of ID	Mineral Type	Image Number	Structure Comments
1A	C26	None Detected										
1A	E23	MD11			80	130	[redacted]					Non Asbestos
		MF			8	110	[redacted]					Non Asbestos
1A	E26	None Detected										
1A	F23	F			12	70	[redacted]					Non Asbestos
1A	F26	None Detected										
1A	E31	None Detected										
1A	E34	None Detected										
1A	F31	None Detected										
1A	F34	None Detected										
1A	G31	None Detected										
1A	G34	None Detected										
1A	H31	None Detected										
1A	C41	None Detected										
1A	C44	None Detected										
1A	E41	None Detected										
1A	E44	None Detected										
1A	F43	None Detected										
1A	F46	None Detected										
1A	G43	None Detected										
1A	G46	None Detected										
1A	F51	None Detected										
1A	F54	None Detected										
1B	C31	None Detected										
1B	C34	None Detected										
1B	E31	None Detected										
1B	E34	None Detected										
1B	C41	None Detected										
1B	C44	None Detected										
1B	E41	None Detected										
1B	E44	None Detected										
1B	F41	F			12.5	105	[redacted]					Non Asbestos
1B	F44	None Detected										
1B	F51	None Detected										
1B	F54	None Detected										
1B	G51	None Detected										
1B	G54	None Detected										
1B	H54	None Detected										
1B	K51	None Detected										
1B	F61	None Detected										
1B	F64	None Detected										
1B	G61	None Detected										
1B	G64	None Detected										

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Report Number:	
Sample number:	

Analyzed by:	
Date of Analysis:	

Grid ID	Grid Opening	Structure Type	Structure Number				Dimensions (µm)		Level of ID	Mineral Type	Image Number	Structure Comments
			Primary	Total			Width	Length				
1C	C33	None Detected										
1C	C36	None Detected										
1C	E33	None Detected										
1C	E36	None Detected										
1C	F33	None Detected										
1C	F36	None Detected										
1C	G33	None Detected										
1C	G36	None Detected										
1C	H33	None Detected										
1C	E23	None Detected										
1C	E26	None Detected										
1C	F23	None Detected										
1C	F26	None Detected										
1C	C41	None Detected										
1C	C44	None Detected										
1C	E41	None Detected										
1C	E44	None Detected										
1C	F41	None Detected										
1C	F44	None Detected										
1C	G43	None Detected										
1D	E34	None Detected										
1D	F31	None Detected										
1D	F34	None Detected										
1D	G31	None Detected										
1D	G34	None Detected										
1D	H31	None Detected										
1D	H34	None Detected										
1D	E41	None Detected										
1D	E44	None Detected										
1D	F41	None Detected										
1D	F44	None Detected										
1D	G41	None Detected										
1D	G44	None Detected										
1D	H43	None Detected										
1D	H46	None Detected										
1D	E53	None Detected										
1D	E56	None Detected										
1D	F53	None Detected										
1D	F56	None Detected										
1E	E33	None Detected										
1E	E36	None Detected										
1E	F33	None Detected										
1E	F36	None Detected										
1E	G33	F	4	4	15	95	[redacted]					Non Asbestos
1E	G36	None Detected										
1E	H33	None Detected										
1E	F41	None Detected										
1E	G41	None Detected										
1E	G44	None Detected										
1E	H41	None Detected										
1E	H44	None Detected										
1E	G51	None Detected										
1E	G54	None Detected										
1E	H51	None Detected										

EMS Laboratories

NIOSH 7402/ISO

117 W. Bellevue Drive
Pasadena, CA 91105
626-568-4065

Report Number:	
Sample number:	

Analyzed by:	
Date of Analysis:	

Grid ID	Grid Opening	Structure Type	Structure Number				Dimensions (µm)		Level of ID	Mineral Type	Image Number	Structure Comments
			Primary	Total			Width	Length				
1E	H54	None Detected										
1E	F61	None Detected										
1E	F64	None Detected										

Elutriator Data

Lab #: 137821

Date: 6/28/10 Client: Northgate

Sample ID: SSAN7-03-0.00 BPC - FD

Sample weight (g): 78.1

Time air flow started: 800

Tumbler rpm: 30 *turn down RPM to 20 @ 1033 am *turn up RPM to 30 @ 1340

IST Flowmeter (mL/min): 103 *See below

ME Flowmeter (mL/min): 1370

Filter No.	Start Time	Tested flow rate (mL/min)	Final Filter Wt (mg)	Initial Filter Wt (mg)	Dust Weight (mg)	Time Value (min)	Avg. rate of deposition (ug/min)	Optimal time (min)	
1	1000	155	0.03858	0.02518	13.40	30			
2	1030		0.03447	0.02520	9.27	20			
3	1050		0.03111	0.02458	6.53	25			*loss 10%
4	1115		0.02894	0.02431	4.63	25			*loss 10%
5	1140		0.02784	0.02534	2.50	15			*loss 10%
6	1155		0.02887	0.02537	3.50	30			
7	1225		0.02623	0.02445	1.78	15			
8	1240		0.02952	0.02550	4.02	45			*loss 45%
Polycarbonate filters									
Time							Dep. Rate	Estiimate	
1 1100	1145			4.431		45			
2 1123	1135			4.380		12			
3 1248	1300			4.417		12			
4 1306	1326			4.469		20			
5 1339	1401			4.373		22			
6 1410	1422			4.350		12			
7 1432	1450			4.402		18			
8 1455	1521		4.554	4.386	168	26			prep 6/29/10

*Raise up 1st flow to 118 @ 1155 AM

Elutriator Data

Date: 6/28/10 Client:

Lab #: 137821

Sample ID:

Sample weight (g):

Time air flow started:

Tumbler rpm:

IST Flowmeter (mL/min):

ME Flowmeter (mL/min):

Filter No.	Start Time	Tested flow rate (mL/min)	Final Filter Wt (mg)	Initial Filter Wt (mg)	Dust Weight (mg)	Time Value (min)	Avg. rate of deposition (ug/min)	Optimal time (min)
9	1325		0.02809	0.02404	4.05	35		
10	1400		0.02767	0.02423	3.44	30		
11	1430		0.02872	0.02524	3.48	20		
12	1450		0.02822	0.02438	3.84	30		
13	1520							
Calculations								
Time							Dep. Rate	Estiimate

Loss 5%

138821 Moisture content

6-7-10

#SSAPR-01-00BPC
dish. wt. 19.25g
sample wt: 119.21g - 19.25 = 99.96g (initial wt.)
at 6:20Am - 7:20 - 114.88 - 19.25 = 95.63g
8:05 - 9:05 - 114.86 - 19.25 = 95.61g (Final wt.)

% moisture → $100 \times \frac{(99.96 - 95.61)}{95.61g} = 4.55\%$

#SSANT-03-0.00BPC-FD
dish wt. 31.48g
sample wt. 131.92 - 31.48 = 100.44g (initial wt.)
8:50 - 9:50 129.19 - 31.48 = 97.71g
10:30 - 11:30 128.88 - 31.48 = 97.40
12:30 - 1:30 128.87 - 31.48 = 97.39

% moisture → $100 \times \frac{100.44 - 97.39}{97.39} = 3.13\%$

#SSANT-03-0.00BPC
dish wt. 31.46g
sample wt. 131.89 - 31.46g = 100.43g (initial wt.)
8:50 - 9:50 128.96 - 31.48 = 97.5g
10:30 - 11:30 128.88 - 31.46 = 91.42g
12:30 - 1:30 128.84 - 31.46 = 91.38g

% moisture → $100 \times \frac{100.43 - 91.38}{91.38} = 3.13\%$

BP

(47) 96 G.O.

Prep 9:00 – 11:30 90

Count (Page of) NIOSH 7402/ISO

Report number : 137821
Sample number: SSAN7-03-0.00BPC-FD
File name: Northgate
Sample Description: 168 mg

Filter Type: ~~MCE~~ PC 385 mm2
Date Sample was Run: 6/28/10

Magnification: 9,200 X

Preparation date: 6/29/10 By JAP
Analysis date: 6-29-10 + 6-30-10 By PC

Grid opening dimension: 0.0094 mm²
Level of Analysis: (C): CD, CDX
(A): ADX, ADQ

Grid loading Moderate Condition of Grid Good

Copy

2 hrs

Grid	Grid Opening	Number of structures Primary	Number of structures Total	Class	Type of Structure	Width mm	Length mm	Comments
1A	C2-6							
	E2-3				MDL	8U	13U	Nonasb
	F				ML=	8	110	
	E2-6				F			
	E2-3				F	12	7U	Non asb
	E2-6							
	E3-1							
	E3-4							
	E3-1							
	E3-4							
	E3-1							
	E3-4							
	HB-1							
	C4-1							
	C4-4							
	E4-1							
	E4-4							
	E4-3							
	E4-6							
	C4-3							
	C4-6							
	E5-1							
	E5-4							
1B	C3-1							
	C3-4							
	E3-1							
	E3-4							
	C4-1							
	C4-4							

EM-10A (2002)

TEM Asbestos Structure Count (Page of)

Report number: 137821 SAMPLE NO: SSAN7-03-0.00 BPC-FD X 9,200

Grid	Grid Opening	Number of structures primary	Number of structures Total	Class	Type of Structure	Width Mm	Length Mm	Comments
	E4-1							
	E4-4							
	E4-1				E	12f	10f	NVM a/s
	E4-4							
	E5-1							
	E5-4							
	G5-1							
	G5-4							
	H5-1							
	K5-1							
	I26-1							
	F6-4							
	G6-1							
JD	G6-4							
IC	C3-3							
	C3-6							
	E3-3							
	E3-6							
	F3-3							
	I3-6							
	G3-3							
	G3-6							
	H3-3							
	I2-3							
	F2-6							
	K23							
	F26							
	C4-1							
	C4-4							
	E4-1							
	E4-4							
	F4-1							
	K4-4							
SD	G4-3							

TEM Asbestos Structure Count (Page of)

Report number: 137821 SAMPLE NO: SSAN7-03-0,00 BPC-FD X 9,200

Grid	Grid Opening	Number of structures primary	Number of structures Total	Class	Type of Structure	Width Mm	Length Mm	Comments
1D	E3-4							
	F3-1							
	F3-4							
	G3-1							
	G3-4							
	H3-1							
	H3-4							
	E4-1							
	E4-4							
	F4-1							
	F4-4							
	G4-1							
	G4-4							
	H4-3							
	H4-6							
	E5-3							
	E5-6							
	F5-3							
1A	F5-6							
1E	E3-3							
	E3-6							
	F3-3							
	F3-6							
	G3-3				F	15-	9-	Non asb
	G3-6							
	H3-3							
	H4-1							
	G4-1							
	G4-4							
	H4-1							
	H4-4							
	G5-1							
	G5-4							
	H5-4							
	F6-1							
1B	F6-4							

EMS Laboratories Inc.
117 West Bellevue Drive, Pasadena, CA 91105
Phone: 626-568-4065 Fax: 626-796-5282
Email: akolk@emslabs.com

Attn: Derrick Wills
Tronox-LLC-Henderson
PO Box 55
Henderson, NV 89009

Phone: (947) 375-7004

Project: Tronox LLX Henderson, 560 W. Lake Mead Dr., Henderson, NV/2027.001

Date Sampled: 5/12/2010 12:15PM

Customer ID: TRNX26
Customer PO: 2027.001
Received: 5/19/2010 10:05AM
EMS LAB No: 137821
Date Prepared: 6/29/2010 2:00PM
Analysis Date: 7/7/2010 0:00

Report Date:

NIOSH 7402/ISO

DRAFT, MODIFIED ELUTRIATOR METHOD FOR THE DETERMINATION OF ASBESTOS IN SOILS AND BULK MATERIAL METHOD

EMS Laboratory Number:	137821		Mass of Respirable Dust on Fiber:	167	µg
Customer Sample Number:	SSAN7-03-0.00BPC		Area of collection filter:	385	mm^2
Minimum Level of Analysis (chrysotile):	CD		Grid openings area:	0.0094	mm^2
Minimum Level of Analysis (amphibole):	ADX		Grid Openings Analyzed:	96	
Magnification used for fiber counting:	9,200	x	Min. Str. Length/Max Str. Diameter:	>5/<0.4	microns
Aspect ratio for fiber definition:	3:1				
			Analyst(s):	Radha Singh	

Dust Generator - Total Dried Sample Weight-78.1g		Soil % Moisture	3.1	%
	Air Flow Rate Through ME Opening of Dust Generator:		1370	
Not Used	Air Flow Rate Through IST Opening of Dust Generator:		130	
Used in Tumbler	Estimate Total Air Flow Through Elutriator:		1500	

Analytical Sensitivity:	2.55E+06 Structure /g PM 10	Limit of Detection:	7.65E+06 Structure /g PM 10

Test For Uniformity (Chi-Square results)

		Counts		Poisson 95% Confidence Interval			
Structure Class	**Min ID Level Required**	**Primary Str.**	**Total Str.**	**Density** St/mm^2	**Conc.** Str/g PM10	**Lower Limit** Str/g PM10	**Upper Limit** Str/g PM10
Asbestos Structures>5um, ≤10um	ADX/CD	3	3	3.3	1.58E+06	0	2.24E+07
Asbestos Structures>5um, ≤10um (Chrys)	CD	3	3	3.3	1.58E+06	0	2.24E+07
Asbestos Structures>5um, ≤10um (Amph)	ADX	0	0	0	0	0	7.65E+06
Asbestos Structure >10um (Long)	ADX/CD	0	0	0	0	0	7.65E+06
Asbestos Structure >10um (Chrys)	CD	0	0	0	0	0	7.65E+06
Asbestos Structure >10um (Amph)	ADX	0	0	0	0	0	7.65E+06
Total Protocol Asbestos Structures	ADX/CD	3	3	3.3	1.58E+06	0	2.24E+07
Protocol Asbestos Structures (Chrys)	CD	3	3	3.3	1.58E+06	0	2.24E+07
Protocol Asbestos Structures (Amph)	ADX	0	0	0	0	0	7.65E+06
Total Protocol Non Asbestos Structures	**NAM**	0	0	0	0	0	7.65E+06

Approved by Technical Director

EMS Laboratories

NIOSH 7402/ISO
117 W. Bellevue Drive
Pasadena, CA 91105
626-568-4065

Client:	Derrick Willis, Tronox LLC-Henderson	**Filter Type:**	MCE 385 mm^2
Report number :	137821	**Magnification:**	9200
Sample number:	SSAN7-03-0.00BPC	**Grid Opening Dimension: mm^2**	0.0094
Project:	2027.001/Tronox LLC Henderson, 560 W. Lake Mead Dr.,	**Grid Loading:**	Moderate

Elutriation Date: 6/29/2010 by Joel Paruli
Preparation Date: 7/2/2010 by Joel Paruli
Analysis Date: 7/7/2010 by Bernadine Kolk

Asbestos Structures>5um, ≤10um (Chrys)	3
Asbestos Structures>5um, ≤10um (Amph)	0
Asbestos Structure >10um (Chrys)	0
Asbestos Structure >10um (Amph)	0
Protocol Asbestos Structures (Chrys)	3
Protocol Asbestos Structures (Amph)	0

Grid Openings	96
Mass - ug	167
Anlytical sensitivity	[redacted]

Grid ID	Grid Opening	Structure Type	Structure Number		Dimensions - mm		Dimensions (µm)		Level of ID	Mineral Type	Image Number	Structure Comments
			Primary	Total	Width	Length	Width	Length				
1A	B34	None Detected										
1A	C34	None Detected										
1A	E34	None Detected										
1A	F34	None Detected										
1A	G34	None Detected										
1A	H34	None Detected										
1A	C41	None Detected										
1A	E41	None Detected										
1A	F41	None Detected										
1A	G41	None Detected										
1A	H41	None Detected										
1A	K41	None Detected										
1A	B54	None Detected										
1A	C54	None Detected										
1A	E54	F	1	1	0.5	54	0.05	5.87	CD	CHRYSOTILE		
1A	F54	None Detected										
1A	G54	None Detected										
1A	54	None Detected										
1A	F61	None Detected										
1A	G61	None Detected										
1B	C23	MD11	2		55	82	5.98	8.91	CD	CHRYSOTILE		
		MF		2	0.5	66	0.05	7.17	CD	CHRYSOTILE		
1B	E23	None Detected										
1B	F23	None Detected										
1B	G23	None Detected										
1B	H23	None Detected										
1B	B36	None Detected										
1B	C36	None Detected										
1B	E36	None Detected										
1B	F36	None Detected										
1B	G36	None Detected										
1B	H36	None Detected										
1B	C43	None Detected										
1B	E43	None Detected										
1B	F43	None Detected										
1B	G43	None Detected										
1B	H43	None Detected										
1B	B56	None Detected										
1B	C56	None Detected										
1B	E56	None Detected										
1B	F56	None Detected										
1C	C26	None Detected										
1C	E26	None Detected										

EMS Laboratories

NIOSH 7402/ISO

117 W. Bellevue Drive
Pasadena, CA 91105
626-568-4065

Report Number:	
Sample number:	

Analyzed by:	
Date of Analysis:	

Grid ID	Grid Opening	Structure Type	Structure Number				Dimensions (µm)		Level of ID	Mineral Type	Image Number	Structure Comments
			Primary	Total			Width	Length				
1C	F26	None Detected										
1C	G26	None Detected										
1C	H26	None Detected										
1C	C33	None Detected										
1C	E33	None Detected										
1C	F33	None Detected										
1C	G33	None Detected										
1C	H33	None Detected										
1C	C46	None Detected										
1C	E46	None Detected										
1C	F46	None Detected										
1C	G46	None Detected										
1C	H46	None Detected										
1C	K46	None Detected										
1C	E56	None Detected										
1C	F56	None Detected										
1C	G56	None Detected										
1D	C31	None Detected										
1D	E31	None Detected										
1D	F31	None Detected										
1D	G31	None Detected										
1D	H31	None Detected										
1D	B44	None Detected										
1D	C44	None Detected										
1D	E44	None Detected										
1D	F44	None Detected										
1D	G44	None Detected										
1D	H44	None Detected										
1D	C51	None Detected										
1D	E51	None Detected										
1D	F51	None Detected										
1D	G51	None Detected										
1D	H51	None Detected										
1D	K51	None Detected										
1D	C61	None Detected										
1D	E61	None Detected										
1E	B34	None Detected										
1E	C34	None Detected										
1E	E34	None Detected										
1E	F34	None Detected										
1E	G34	None Detected										
1E	H34	None Detected										
1E	B41	None Detected										
1E	C41	None Detected										
1E	E41	None Detected										
1E	F41	None Detected										
1E	G41	None Detected										
1E	H41	None Detected										
1E	K41	None Detected										
1E	B54	None Detected										
1E	C54	None Detected										
1E	E54	MD11			5	57	0.54	6.20	CD	CHRYSOTILE		
		MF			0.3	57	0.03	6.20	CD	CHRYSOTILE		
1E	F54	None Detected										
1E	C64	None Detected										

Page 1 of 2

Elutriator Data

Date: 6/29/10 Client: Northgate

Lab #: 137821

Sample ID: SSAN7-03 -0.00 BPC Sample weight (g): 78.1

Time air flow started: 0800 Tumbler rpm: 30 *turn down RPM to 20 @ 1031
*turn up RPM to 30 @ 1209

IST Flowmeter (mL/min): 130 ME Flowmeter (mL/min): 13.70

Filter No.	Start Time	Tested flow rate (mL/min)	Final Filter Wt (mg)	Initial Filter Wt (mg)	Dust Weight (mg)	Time Value (min)	Avg. rate of deposition (ug/min)	Optimal time (min)	
1	0800	130	0.03025	0.02440	11.85	30			*loss 5%
2	0830		0.03225	0.02455	7.70	20			*loss 20%
3	0850		0.02803	0.02421	3.82	20			*loss 20%
4	1110		0.02659	0.02456	4.03	25			*loss 10%
5	1135		0.02650	0.02431	2.19	30			*loss 80%
6	1205		0.02962	0.02443	5.19	30			
7	1235		0.02902	0.02513	3.89	20			*loss 10%
8	1255		0.02884	0.02434	4.50	25			
	Time						Dep. Rate	Estiimate	
1	1120	1131		4.334		11			
2	1144	1204		4.404		20			
3	1302	1317		4.394		15			
4	1338	1354		4.454		16			
5	1400	1420	4579	4.412	167	20			7/2/10 (Prep)
6									
7									
8									

Page 1 of 2

Elutriator Data

Date: 6/29/10 Client:

Lab #: 137821

Sample ID:

Sample weight (g):

Time air flow started:

Tumbler rpm:

IST Flowmeter (mL/min):

ME Flowmeter (mL/min):

Filter No.	Start Time	Tested flow rate (mL/min)	Final Filter Wt (mg)	Initial Filter Wt (mg)	Dust Weight (mg)	Time Value (min)	Avg. rate of deposition (ug/min)	Optimal time (min)	
9	1320	170	0.02873	0.02437	4.36	25			
10	1355	↓	0.02708	0.02436	2.72	35			*loss 5%.
11	1425 JP			~~0.02542~~ JP		~~30~~ 35 JP			*loss 30%
12									
Time							Dep. Rate	Estiimate	

6-7-10

#SSAP8-01-00BPC
dish. wt. 19.25g
sample wt: 119.21g - 19.25 = 99.96g (initial wt.)
at 6:20AM - 7:20 - 114.88 - 19.25 = 95.63g
8:05 - 9:05 - 114.86 - 19.25 = 95.61g (Final wt.)

$$\%\text{ moisture} \rightarrow 100 \times \frac{(99.96 - 95.61)}{95.61\text{g}} = 4.55\%$$

#SSAN7-03-0.00BPC-FD
dish wt. 31.48g
sample wt. 131.92 - 31.48 = 100.44g (initial wt.)
8:50 - 9:50 129.19 - 31.48 = 97.71g
10:30 - 11:30 128.88 - 31.48 = 97.40
12:30 - 1:30 128.87 - 31.48 = 97.39

$$\%\text{ moisture} \rightarrow 100 \times \frac{100.44 - 97.39}{97.39} = 3.13\%$$

#SSAN7-03-0.00BPC
dish wt. 31.46g
sample wt. 131.89 - 31.46g = 100.43g (initial wt.)
8:50 - 9:50 128.96 - 31.48 = 97.50g
10:30 - 11:30 128.88 - 31.46 = 91.42g
12:30 - 1:30 128.84 - 31.46 = 91.38g

$$\%\text{ Moisture} \rightarrow 100 \times \frac{100.43 - 97.38}{97.38} = 3.13\%$$

BP

Count (Page of) NIOSH 7402/ISO

Prep Time: 12⁰⁰ 230 pm

Report number : 137821

Sample number: SSAN7-03-0.00BPC

File name: Northgate

Sample Description: 167 mg

Filter Type: ___ 385 mm2

Date Sample was Run: 6/29/10

Magnification: 9,200 X

Preparation date: 7/2/10 By JAP

Analysis date: 7/7/10 By [illegible]

Grid opening dimension: 0.0094 mm^2

Level of Analysis: (C): CD, CDX

(A): ADX, ADQ

Grid loading [illegible]

Condition of Grid [illegible]

Grid	Grid Opening	Number of structures Primary	Number of structures Total	Class	Type of Structure	Width mm	Length mm	Comments
A	B34	[illegible]						
	C34	[illegible]						
	E24	[illegible]						
	F24	[illegible]						
	G24	[illegible]						
	[illegible]	[illegible]						
	[illegible]	[illegible]						
	[illegible]	[illegible]						
	[illegible]	[illegible]						
	[illegible]	[illegible]						
	[illegible]	[illegible]						
	[illegible]	[illegible]						
	B54	N50						
	C54	[illegible]						
	L54				F	0.5	54	[illegible] 3538
	E64	NSD						
	G64	NSD						
	H54	NSD						[illegible]
	F61	NSD						
	G61	NSD						
B	C23	2			MD11	5.5	82	[illegible] 3529
			2		MT	0.5	[illegible]	
	L23	NSD						
	F23	[illegible]						
	G23	[illegible]						
	H23	[illegible]						
	B36	N50						
	C36	NSD						
	E36	NSD						
	F36	NSD						
	G36	NSD						
	H36	NSD						

TEM-10A (2002)

TEM Asbestos Structure Count (Page of)

Report number: 137821 SAMPLE NO: SSAN7 - 03-0.00BPC X 9,200

Grid	Grid Opening	Number of structures primary	Number of structures Total	Class	Type of Structure	Width Mm	Length Mm	Comments
	C43	NSD						
	E43	NSD						
	F43	NSD						
	G43	NSD						
	H43	NSD						
	B56	NSD						
	C56	NSD						
	E56	NSD						
	F56	NSD						
C	C26	NSD						
	E26	NSD						
	F26	NSD						
	G26	NSD						
	H26	NSD						[illegible]
	C33	NSD						
	E33	NSD						
	F33	NSD						
	G33	NSD						
	H33	NSD						
	C46	NSD						
	E46	NSD						
	F46	NSD						
	G46	NSD						
	H46	NSD						
	K46	NSD						
	E56	NSD						
	F56	NSD						
	G56	NSD						
D	C31	NSD						
	E31	NSD						
	F31	NSD						
	G31	NSD						
	H31	NSD						
	B44	NSD						
	C44	NSD						
	E44	NSD						
	F44	NSD						
	G44	NSD						

TEM Asbestos Structure Count (Page 3 of 7)

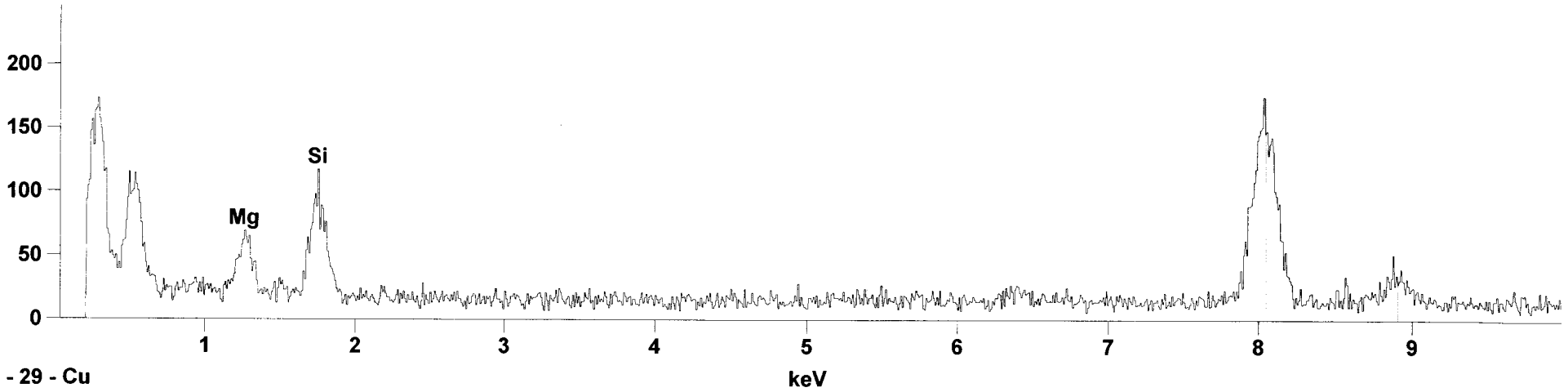
Report number: 137821 SAMPLE NO: SSAN7-03-0.00 BPC X 9,200

Grid	Grid Opening	Number of structures primary	Number of structures Total	Class	Type of Structure	Width Mm	Length Mm	Comments
	H44	NSD						
	[illegible]51	NSD						
	E61	NSD						
	F51	NSD						
	G51	NSD						
	H51	NSD						
	K51	NSD					MD Cray <5u
	[illegible]	NSD						
	[illegible]	NSD						
E	B34	NSD						
	[illegible]34	NSD						
	E34	NSD						
	F34	NSD						
	G34	NSD						
	[illegible]34	NSD						
	B41	NSD						
	C41	NSD						
	E41	NSD						
	F41	NSD						
	G41	NSD						
	H41	NSD						
	K41	NSD						
	B54	NSD						
	C54	NSD						
	E54	3		MDII	5	57		SAED 35°D
			3	MF	0.3	57		Cray
	F54	NSD						Al Si O F 5X 62
	C64	NSD						

Project: New Project

Full scale counts: 226

137821 SSAN7-03-00 BPC GRID B STR 1 GO C2-3



klm - 29 - Cu

Mon Aug 02 11:15:05 2010
Gaussian Fit With Standards Chi Squared:1.930
Correction Method: Cliff-Lorimer (MBTS) w/o Absorbance

Live Time:64.9 sec.
Acc.Voltage: 100.0 kV
Take Off Angle: 35.0 deg.
Detector: Det B- Quantum

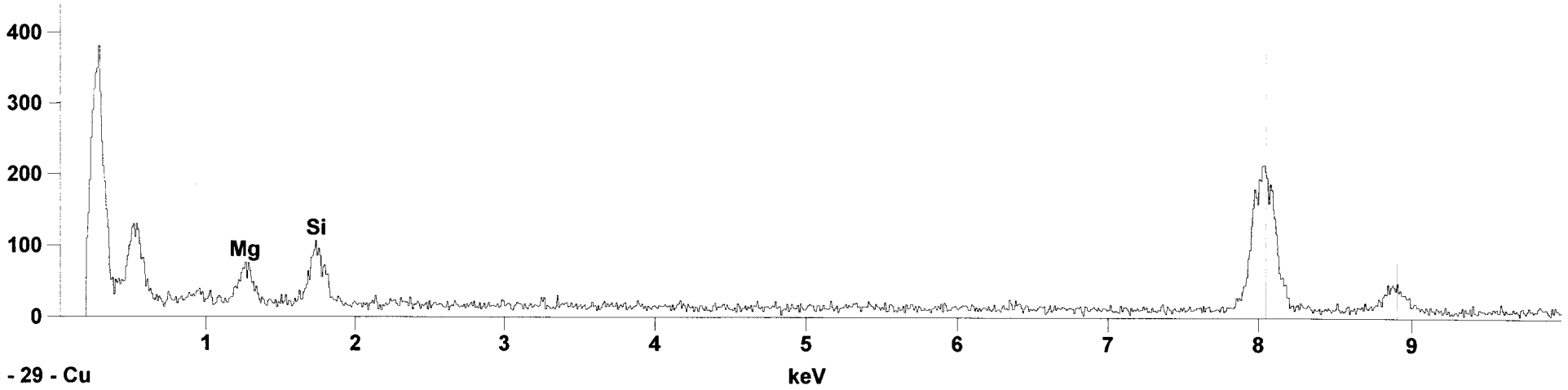
Quantitative Results 137821 SSAN7-03-00 BPC GRID B STR 1 GO C2-3

Element Line	Net Counts	Weight %	Weight % Error	Atom %	Atom % Error
Mg K	685	44.38	---	47.97	+/- 2.17
Si K	1116	55.62	---	52.03	+/- 1.77
Total		100.00		100.00	

Project: New Project

Full scale counts: 404

137821 SSAN7-03-00 BPC GRID E STR 1 GO E5-4



klm - 29 - Cu

Mon Aug 02 11:22:30 2010
Gaussian Fit With Standards Chi Squared:2.162
Correction Method: Cliff-Lorimer (MBTS) w/o Absorbance

Live Time:117.6 sec.
Acc.Voltage: 100.0 kV
Take Off Angle: 35.0 deg.
Detector: Det B- Quantum

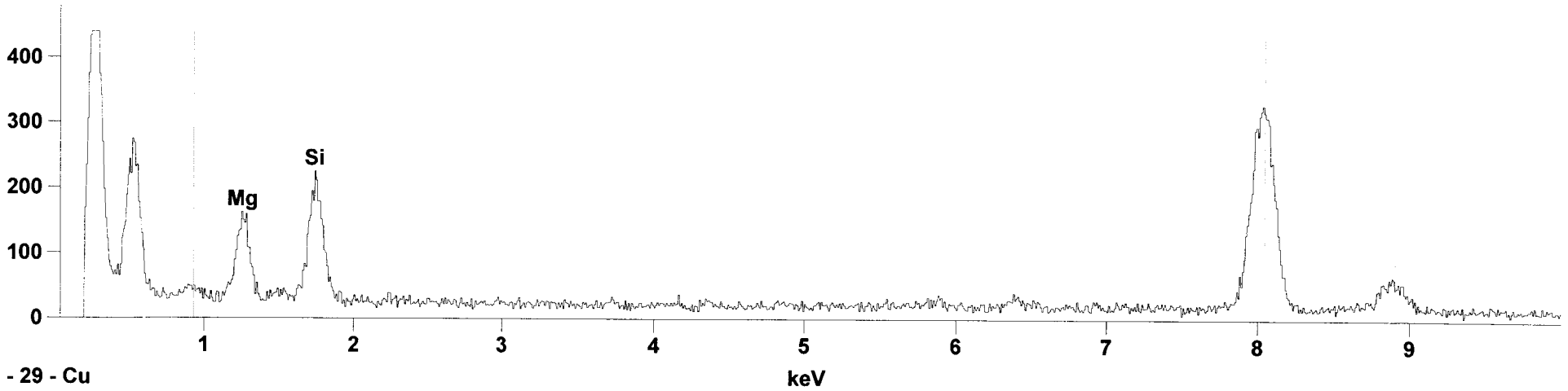
Quantitative Results 137821 SSAN7-03-00 BPC GRID E STR 1 GO E5-4

Element Line	Net Counts	Weight %	Weight % Error	Atom %	Atom % Error
Mg K	605	45.98	---	49.59	+/- 2.38
Si K	924	54.02	---	50.41	+/- 1.86
Total		100.00		100.00	

Project: New Project

Full scale counts: 440

137821 SSAN7-03-00 BPC GRID A STR 1 GO E54



klm - 29 - Cu

Mon Aug 02 11:07:21 2010
Gaussian Fit With Standards Chi Squared:1.105
Correction Method: Cliff-Lorimer (MBTS) w/o Absorbance

Live Time:109.5 sec.
Acc.Voltage: 100.0 kV
Take Off Angle: 35.0 deg.
Detector: Det B- Quantum

Quantitative Results 137821 SSAN7-03-00 BPC GRID A STR 1 GO E54

Element Line	Net Counts	Weight %	Weight % Error	Atom %	Atom % Error
Mg K	1172	46.01	---	49.61	+/- 1.69
Si K	1788	53.99	---	50.39	+/- 1.35
Total		100.00		100.00	

EMS Laboratories Inc.
117 West Bellevue Drive, Pasadena, CA 91105
Phone: 626-568-4065 Fax: 626-796-5282
Email: akolk@emslabs.com

Attn: Derrick Wills
Tronox-LLC-Henderson
PO Box 55
Henderson, NV 89009

Phone: (947) 375-7004

Project: Tronox LLX Henderson, 560 W. Lake Mead Dr., Henderson, NV/2027.001

Date Sampled: 5/12/2010 09:10AM

Customer ID: TRNX26
Customer PO: 2027.001
Received: 5/19/2010 10:05AM
EMS LAB No: 137821
Date Prepared: 6/30/2010 1:05PM
Analysis Date: 7/6/2010 0:00

Report Date:

NIOSH 7402/ISO

DRAFT, MODIFIED ELUTRIATOR METHOD FOR THE DETERMINATION OF ASBESTOS IN SOILS AND BULK MATERIAL METHOD

EMS Laboratory Number:	137821		Mass of Respirable Dust on Fiber:	156	µg
Customer Sample Number:	SSAN5-02-0.00BPC		Area of collection filter:	385	mm^2
Minimum Level of Analysis (chrysotile):	CD		Grid openings area:	0.0094	mm^2
Minimum Level of Analysis (amphibole):	ADX		Grid Openings Analyzed:	100	
Magnification used for fiber counting:	9,200	x	Min. Str. Length/Max Str. Diameter:	>5/<0.4	microns
Aspect ratio for fiber definition:	3:1				
			Analyst(s):	Radha Singh	
Dust Generator - Total Dried Sample Weight-75.8g			Soil % Moisture	8.7	%
			Air Flow Rate Through ME Opening of Dust Generator:	1370	
Not Used			Air Flow Rate Through IST Opening of Dust Generator:	100	
Used in Tumbler			Estimate Total Air Flow Through Elutriator:	1470	

Analytical Sensitivity: 2.63E+06 Structure /g PM 10 Limit of Detection: 7.86E+06 Structure /g PM 10

Test For Uniformity (Chi-Square results)

Structure Class	Min ID Level Required	Counts Primary Str.	Counts Total Str.	Density St/mm²	Poisson 95% Confidence Interval Conc. Str/g PM10	Lower Limit Str/g PM10	Upper Limit Str/g PM10
Asbestos Structures>5um, ≤10um	ADX/CD	1	1	1.06	2.63E+06	6.60E+04	1.47E+07
Asbestos Structures>5um, ≤10um (Chrys)	CD	1	1	1.06	2.63E+06	6.60E+04	1.47E+07
Asbestos Structures>5um, ≤10um (Amph)	ADX	0	0	0	0	0	7.86E+06
Asbestos Structure >10um (Long)	ADX/CD	0	0	0	0	0	7.86E+06
Asbestos Structure >10um (Chrys)	CD	0	0	0	0	0	7.86E+06
Asbestos Structure >10um (Amph)	ADX	0	0	0	0	0	7.86E+06
Total Protocol Asbestos Structures	ADX/CD	1	1	1.06	2.63E+06	6.60E+04	1.47E+07
Protocol Asbestos Structures (Chrys)	CD	1	1	1.06	2.63E+06	6.60E+04	1.47E+07
Protocol Asbestos Structures (Amph)	ADX	0	0	0	0	0	7.86E+06
Total Protocol Non Asbestos Structures	**NAM**	2	2	2.12	5.20E+06	6.40E+05	1.90E+07

Approved by Technical Director

EMS Laboratories

NIOSH 7402/ISO

117 W. Bellevue Drive
Pasadena, CA 91105
626-568-4065

Client:	Derrick Willis, Tronox LLC-Henderson	**Filter Type:**	PC 385 mm^2
Report number :	137821	**Magnification:**	9200
Sample number:	SSAN5-02-0.00BPC	**Grid Opening Dimension: mm^2**	0.0094
Project:	2027.001/Tronox LLC Henderson, 560 W. Lake Mead Dr.,	**Grid Loading:**	Moderate

Elutriation Date: 6/30/2010 by Joel Paruli
Preparation Date: 7/1/2010 by Joel Paruli
Analysis Date: 7/6/2010 by Bernadine Kolk

Asbestos Structures>5um, ≤10um (Chrys)	1
Asbestos Structures>5um, ≤10um (Amph)	0
Asbestos Structure >10um (Chrys)	0
Asbestos Structure >10um (Amph)	0
Protocol Asbestos Structures (Chrys)	1
Protocol Asbestos Structures (Amph)	0

Grid Openings	100
Mass - ug	156
Anlytical sensitivity	

Grid ID	Grid Opening	Structure Type	Structure Number		Dimensions - mm		Dimensions (µm)		Level of ID	Mineral Type	Image Number	Structure Comments
			Primary	Total	Width	Length	Width	Length				
1A	E31	None Detected										
1A	F31	None Detected										
1A	G31	None Detected										
1A	H31	None Detected										
1A	B44	None Detected										
1A	C44	None Detected										
1A	E44	None Detected										
1A	F44	None Detected										
1A	B54	None Detected										
1A	C54	None Detected										
1A	E54	None Detected										
1A	F54	None Detected										
1A	G54	None Detected										
1A	H54	None Detected										
1A	K54	None Detected										
1A	C61	None Detected										
1A	E61	None Detected										
1A	F61	None Detected										
1A	G61	None Detected										
1A	H61	None Detected										
1B	B26	None Detected										
1B	C26	None Detected										
1B	E26	None Detected										
1B	F26	None Detected										
1B	G26	None Detected										
1B	H26	None Detected										
1B	B36	None Detected										
1B	C36	None Detected										
1B	E36	None Detected										
1B	F36	None Detected										
1B	G36	None Detected										
1B	H36	None Detected										
1B	F44	None Detected										
1B	H54	MD11			55	83	5.98	9.02				Non Asbestos
		MF			2.5	62	0.27	6.74				Non Asbestos
1B	K36	None Detected										
1B	B46	None Detected										
1B	C46	None Detected										
1B	E46	None Detected										
1B	F46	None Detected										
1B	G46	None Detected										
1B	H46	None Detected										
1B	E56	None Detected										

EMS Laboratories

NIOSH 7402/ISO

117 W. Bellevue Drive
Pasadena, CA 91105
626-568-4065

Report Number:	
Sample number:	

Analyzed by:	
Date of Analysis:	

Grid ID	Grid Opening	Structure Type	Structure Number Primary	Structure Number Total			Dimensions (µm) Width	Dimensions (µm) Length	Level of ID	Mineral Type	Image Number	Structure Comments
1C	C31	None Detected										
1C	E31	None Detected										
1C	F31	None Detected										
1C	G31	None Detected										
1C	H31	None Detected										
1C	F41	None Detected										
1C	G41	MD11	1		110	110	11.96	11.96	CD	CHRYSOTILE		
		MF		1	2	65	0.22	7.07	CD	CHRYSOTILE		
1C	H41	None Detected										
1C	K41	None Detected										
1C	C51	None Detected										
1C	E51	None Detected										
1C	F51	None Detected										
1C	G51	None Detected										
1C	H51	None Detected										
1C	K51	None Detected										
1C	E61	None Detected										
1C	G61	None Detected										
1C	H61	None Detected										
1D	B33	None Detected										
1D	C33	None Detected										
1D	E33	None Detected										
1D	F33	None Detected										
1D	G33	None Detected										
1D	H33	None Detected										
1D	K33	None Detected										
1D	V46	None Detected										
1D	C46	None Detected										
1D	E46	None Detected										
1D	F46	None Detected										
1D	H46	None Detected										
1D	B64	None Detected										
1D	C64	None Detected										
1D	E64	None Detected										
1D	F64	None Detected										
1D	C51	None Detected										
1D	E51	None Detected										
1D	F51	None Detected										
1D	G51	None Detected										
1E	C31	None Detected										
1E	E31	None Detected										
1E	F31	None Detected										
1E	G31	None Detected										
1E	H31	None Detected										
1E	B47	None Detected										
1E	C41	None Detected										
1E	E41	MD11			12	96	1.30	10.43				Non Abestos
		MB			5	96	0.54	10.43				Non Abestos, Crosses Grid Bar
1E	F41	None Detected										
1E	G41	None Detected										
1E	H41	None Detected										
1E	K41	None Detected										
1E	B54	None Detected										
1E	C54	None Detected										
1E	E54	None Detected										

EMS Laboratories

NIOSH 7402/ISO

117 W. Bellevue Drive
Pasadena, CA 91105
626-568-4065

Report Number:	
Sample number:	

Analyzed by:	
Date of Analysis:	

Grid ID	Grid Opening	Structure Type	Structure Number				Dimensions (µm)		Level of ID	Mineral Type	Image Number	Structure Comments
			Primary	Total			Width	Length				
1E	F54	None Detected										
1E	G54	None Detected										
1E	H54	None Detected										
1E	C64	None Detected										
1E	E64	None Detected										

Elutriator Data

Date: 6/30/10 Client: Northgate

Lab #: 137821.

Sample ID: SSANS-02-0.00Bpc Sample weight (g): 75.8

Time air flow started: 800 Tumbler rpm: 30

IST Flowmeter (mL/min): 100 ME Flowmeter (mL/min): 1370

Filter No.	Start Time	Tested flow rate (mL/min)	Final Filter Wt (mg)	Initial Filter Wt (mg)	Dust Weight (mg)	Time Value (min)	Avg. rate of deposition (ug/min)	Optimal time (min)	
1	1005	175	0.02630	0.02436	1.94	30			*loss 90%
2	1035		0.02827	0.02744	3.81	20			*loss 20%
3	1055		0.02695	0.02434	2.61	15			*loss 15%
4	1110		0.02748	0.02443	3.05	30			*loss 50%
5	1140		0.02657	0.02456	2.01	15			loss 10%
6	1155		0.02909	0.02444	4.65	30			ok
7	1225		0.02824	0.02430	3.94	35			loss 30%
8	1300		0.02954	0.02424	5.30	25			loss 5%
Reference Filter									
	Time						Dep. Rate	Estiimate	
1	1121	1141		4.384		20			
2	1200	1220		4.416		20			
3	1305	1320	4.554	4.398	156	15			prep 7/1/10
4									
5									
6									
7									
8									

137821 Moisture content

6-9-10

#SSAN5-02.0.00 BPC
dish wt. 19.24
dish + samp. 119.65 - 19.24 = 100.41 g (initial wt.)
10:40 - 11:40 111.91 - 19.24 = 92.67
12:30 - 1:30 111.90 - 19.24 = 92.46
1:30 - 2:30 111.65 - 19.24 = 92.41 (Final wt.)

% moist. $100 \times \frac{100.41 - 92.41}{92.41} = 8.66\%$

137821 #SSAK5-03-0.00 BPC
dish wt. 31.45
dish + samp. 131.57 - 31.45 = 100.12 g (initial wt.)
10:40 123.43 - 31.45 = 92.12
12:30 123.13 - 31.45 = 91.68
1:30 - 2:30 123.10 - 31.45 = 91.65 (Final wt.)

% moist. $100 \times \frac{100.12 - 91.65}{91.65} = 9.24\%$

#SSAL5-02-0.00 BPC
dish wt. 31.45
dish + samp. 131.48 - 31.45 = 100.03 g (initial wt.)
10:40 127.66 - 31.45 = 96.21
12:30 127.47 - 31.45 = 96.02
1:30 - 2:30 127.45 - 31.45 = 96.00

% moist. $100 \times \frac{100.03 - 96.00}{96.00} = 4.2\%$

BP

Count (Page of) NIOSH 7402/ISO

Prep Time: 12 30 3 00

Report number : 137821
Sample number: SSANS-02-0.00 BPC
File name: Northgate
Sample Description: 156 mg

Filter Type: PC 385 mm2
Date Sample was Run: 6/30/10

Magnification: 9,200 X

Preparation date: 7/1/10 By JAP
Analysis date: 7/6/10 By BK
(A): ADX, ADQ

Grid opening dimension: 0.0094 mm^2
Level of Analysis: (C): CD, CDX

Grid loading Moderate Condition of Grid Good

Grid	Grid Opening	Number of structures Primary	Number of structures Total	Class	Type of Structure	Width mm	Length mm	Comments
A	E31	NSD						
	F31	NSD						
	G31	NSD						
	H31	NSD						
	B44	NSD						
	C44	NSD						
	E44	NSD						
	F44							
	B54	NSD						
	C54	NSD						
	E54	NSD						
	F54	NSD						
	G54	NSD						
	H54							
	K54	NSD						
	C61	NSD						
	E61	NSD						
	F61	NSD						
	G61	NSD						
	H61	NSD						
B	B26	NSD						
	C26	NSD						
	E26	NSD						
	F26	NSD						Chrysotile ~5%
	G26	NSD						
	H26	NSD						
	B36	NSD						
	C36	NSD						Tale/feldspar MD
	E36	NSD						
	F36	NSD						
	G36	NSD						
	H36	NSD						

EM-10A (2002)

F44 2 X 85 X 6 Bars

H54 MD11 55 X 83
2.5 X 62 No grid SHED

TEM Asbestos Structure Count (Page 1 of 3)

Report number: 137821 SAMPLE NO: SSAN5-02-0.00 BPC X 9,200

Grid	Grid Opening	Number of structures primary	Number of structures Total	Class	Type of Structure	Width Mm	Length Mm	Comments
	K36	NSD						
	B46	NSD						
	C46	NSD						
	E46	NSD						MD Tube Fiber 5u
	F46	NSD						" 2 "
	G46	NSD						
	H46	NSD						
	E56	NSD						
C	C31	NSD						
	E31	NSD						
	F31	NSD						
	G31	NSD						
	H31	NSD						Also on MD
	F41	NSD						
	G41	1			MD11	1.10	1.10	Chrysotile
			1		MF	2	65	5u
	H41	NSD						
	K41	NSD						
	C51	NSD				4u	68	Tube F 1.5X68
	E51	NSD						
	F51	NSD						
	G51	NSD						Non-Asb MD 5u
	H	NSD						
	K51	NSD						
	E61	NSD						
	G61	NSD						
	H61	NSD						
D	B33	NSD						
	C33	NSD						
	E33	NSD						
	F33	NSD						
	G33	NSD						
	H33	NSD						
	K33	NSD						
	B46	NSD						
	C46	NSD						
	E46	NSD						
	F46	NSD						

TEM Asbestos Structure Count (Page 3 of 7)

Report number: 137821 SAMPLE NO: SSANS-02-0.0 BPC X 9,200

Grid	Grid Opening	Number of structures primary	Number of structures Total	Class	Type of Structure	Width Mm	Length Mm	Comments
	H46	NSD						
	B64	NSD						
	C64	NSD						
	E64	NSD						
	F64	NSD						
	C51	NSD						CaPO4 > 5 μ
	E51	NSD						
	F51	NSD						
	G51	NSD						
E	C31	NSD						Chry B < 5 μ
	E31	NSD						
	F31	NSD						
	G31	NSD						Mg Al Si SAED 3542*
	H31	NSD						
	B41	NSD						
	C41	NSD						
	E41				MD11	12	96	SAED 3544
					MB	5	96	X Grid Bar
	F41	NSD						
	B41	NSD						
	H41	NSD						
	K41	NSD						
	B54	NSD						
	C54	NSD						
	E54	NSD						
	F54	NSD						
	G54	NSD						
	H54	NSD						
	C64	NSD						
	E64	NSD						

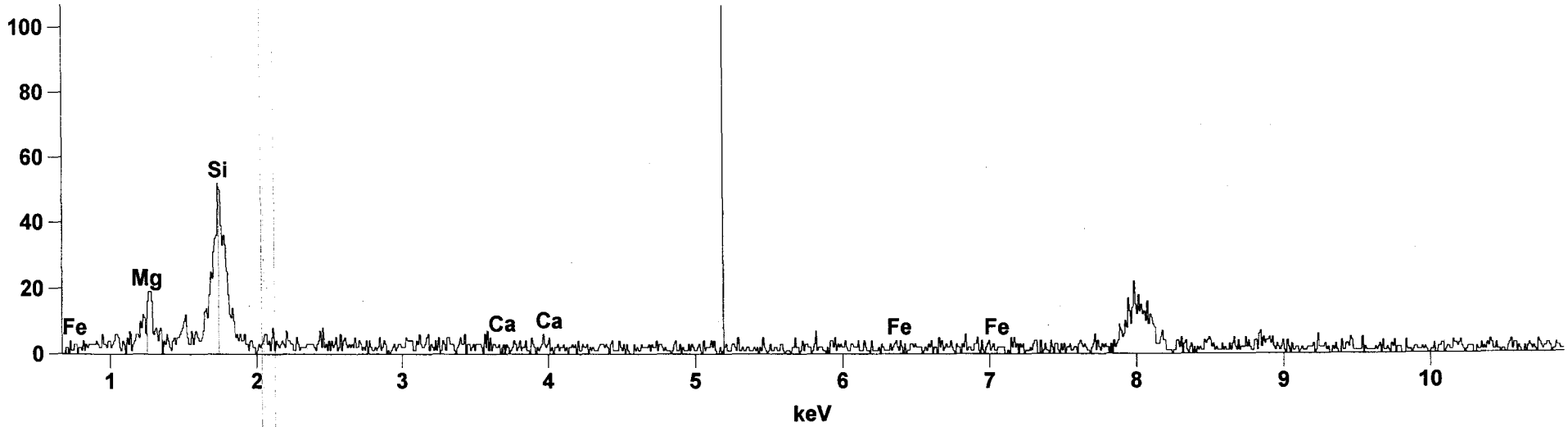
* SAED looked like Chrysotile B 15x63

Project: July2010

Full scale counts: 99

137821 SSAN5-02-0,00 BPC GRID B GO E 46 TALC FIBER

Cursor: 5.187 keV
1 Counts



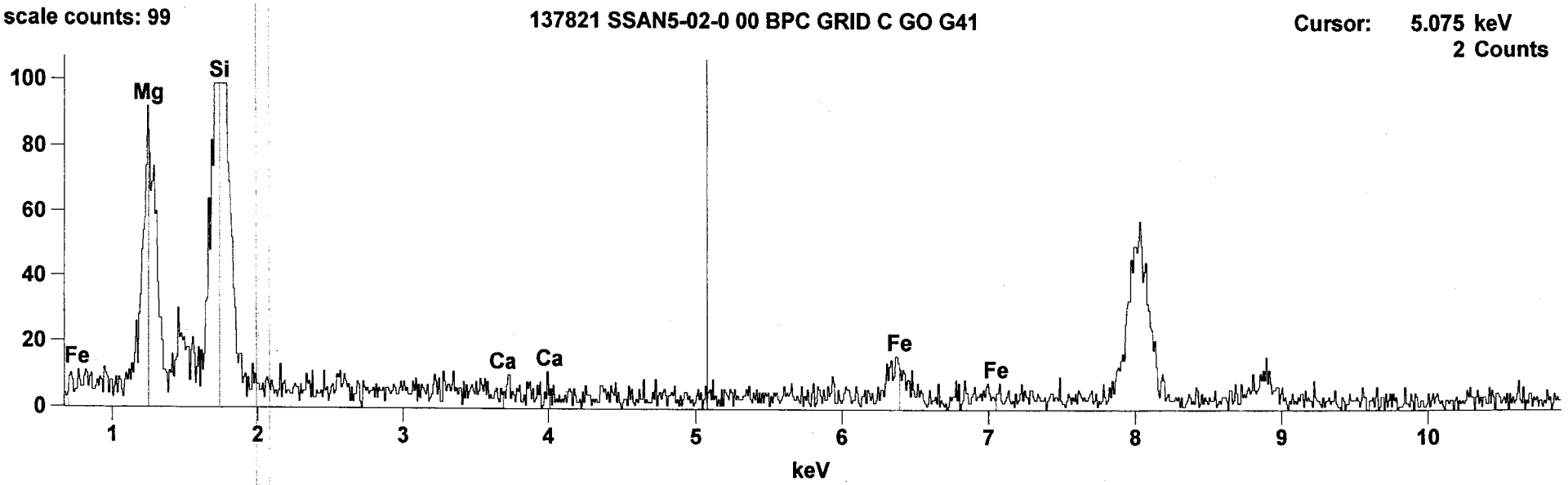
Wed Jul 07 16:04:18 2010
Gaussian Fit Chi Squared:0.455
Correction Method: Cliff-Lorimer (MBTS) w/o Absorbance

Live Time:19.1 sec.

Quantitative Results 137821 SSAN5-02-0,00 BPC GRID B GO E 46 TALC FIBER

Element	Net Counts	Weight %	Weight % Error	Atom %	Atom % Error
Mg	50	20.26	+/- 3.24	22.92	+/- 3.67
Si	241	77.02	+/- 5.11	75.42	+/- 5.01
Ca	7	1.64	+/- 1.40	1.12	+/- 0.96
Ca	0	---	---	---	---
Fe	4	1.09	+/- 1.63	0.54	+/- 0.80
Fe	11	---	---	---	---
Total		100.00		100.00	

Project: July2010



Quantitative Results 137821 SSAN5-02-0 00 BPC GRID C GO G41

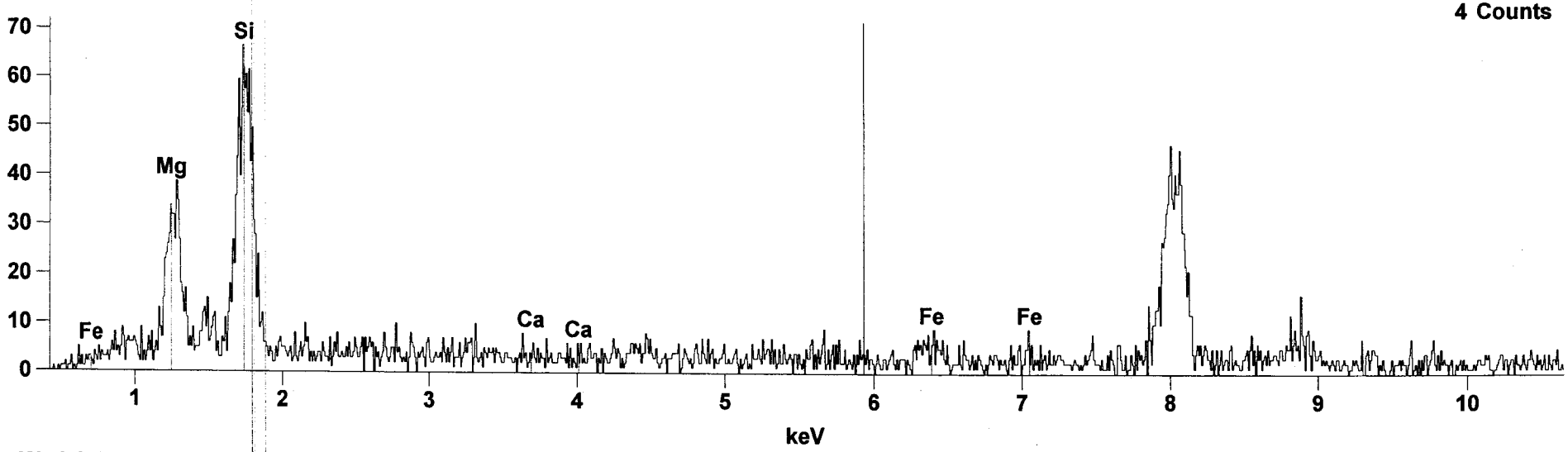
Element	Net Counts	Weight %	Weight % Error	Atom %	Atom % Error
Mg	754	37.15	+/- 1.43	41.55	+/- 1.60
Si	1486	57.76	+/- 1.55	55.90	+/- 1.50
Ca	13	0.37	+/- 0.26	0.25	+/- 0.17
Ca	0	---	---	---	---
Fe	143	4.73	+/- 0.53	2.30	+/- 0.26
Fe	45	---	---	---	---
Total		100.00		100.00	

Project: July2010

Full scale counts: 67

GRID E E41

Cursor: 5.932 keV
4 Counts



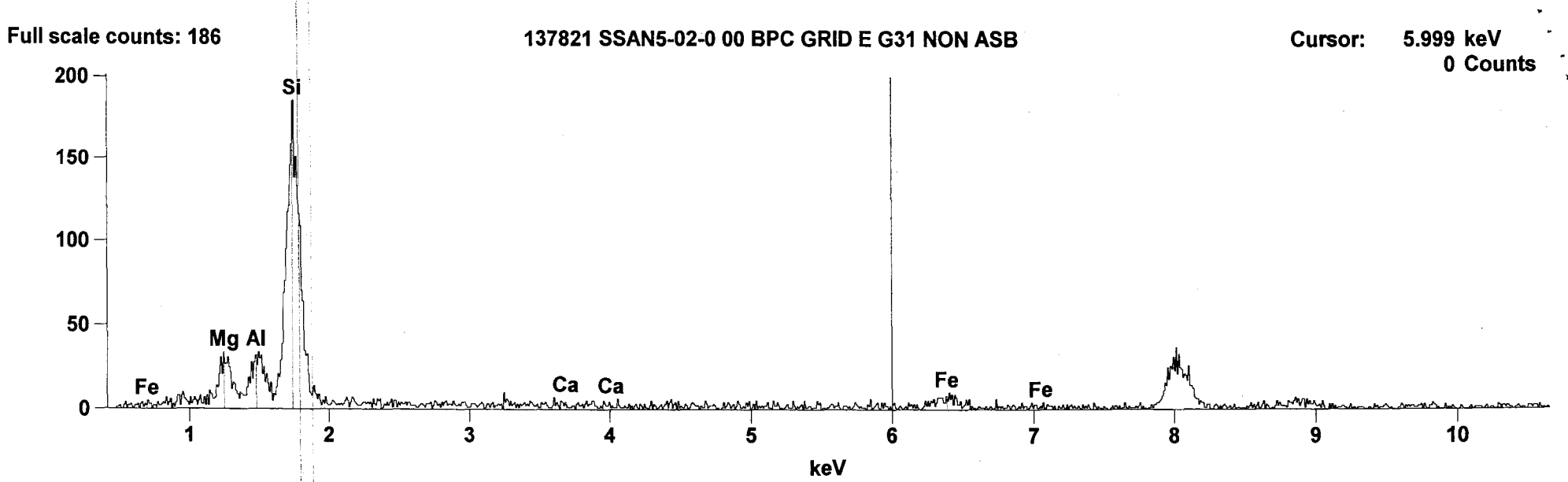
Wed Jul 07 18:38:17 2010
Gaussian Fit Chi Squared:0.578
Correction Method: Cliff-Lorimer (MBTS) w/o Absorbance

Live Time:46.5 sec.

Quantitative Results GRID E E41

Element	Net Counts	Weight %	Weight % Error	Atom %	Atom % Error
Mg	273	38.10	+/- 2.51	42.04	+/- 2.77
Si	539	59.34	+/- 2.64	56.66	+/- 2.52
Ca	5	0.40	+/- 0.48	0.27	+/- 0.32
Ca	0	---	---	---	---
Fe	23	2.15	+/- 0.75	1.03	+/- 0.36
Fe	9	---	---	---	---
Total		100.00		100.00	

Project: July2010



Wed Jul 07 18:27:02 2010 **Live Time:29.6 sec.**
Gaussian Fit Chi Squared:0.595
Correction Method: Cliff-Lorimer (MBTS) w/o Absorbance

Quantitative Results 137821 SSAN5-02-0 00 BPC GRID E G31 NON ASB

Element	Net Counts	Weight %	Weight % Error	Atom %	Atom % Error
Mg	268	14.73	+/- 0.99	16.86	+/- 1.13
Si	1897	82.24	+/- 1.95	81.49	+/- 1.93
P	6	0.26	+/- 0.30	0.23	+/- 0.27
Ca	4	0.13	+/- 0.19	0.09	+/- 0.13
Ca	0	---	---	---	---
Fe	72	2.65	+/- 0.44	1.32	+/- 0.22
Fe	2	---	---	---	---
Total		100.00		100.00	

EMS Laboratories Inc.
117 West Bellevue Drive, Pasadena, CA 91105
Phone: 626-568-4065 Fax: 626-796-5282
Email: akolk@emslabs.com

Attn: Derrick Wills
Tronox-LLC-Henderson
PO Box 55
Henderson, NV 89009

Phone: (947) 375-7004

Project: Tronox LLX Henderson, 560 W. Lake Mead Dr., Henderson, NV/2027.001

Date Sampled: 5/12/2010 8:20AM

Customer ID: TRNX26
Customer PO: 2027.001
Received: 5/19/2010 10:05AM
EMS LAB No: 137821
Date Prepared: 7/1/2010 11:38AM
Analysis Date: 7/8/2010 10AM

Report Date:

NIOSH 7402/ISO

DRAFT, MODIFIED ELUTRIATOR METHOD FOR THE DETERMINATION OF ASBESTOS IN SOILS AND BULK MATERIAL METHOD

EMS Laboratory Number:	137821		Mass of Respirable Dust on Fiber:	137	µg
Customer Sample Number:	SSAK5-03-0.00BPC		Area of collection filter:	385	mm^2
Minimum Level of Analysis (chrysotile):	CD		Grid openings area:	0.0094	mm^2
Minimum Level of Analysis (amphibole):	ADX		Grid Openings Analyzed:	101	
Magnification used for fiber counting:	9,200	x	Min. Str. Length/Max Str. Diameter:	>5/<0.4	microns
Aspect ratio for fiber definition:	3:1				
			Analyst(s):	Radha Singh	

Dust Generator - Total Dried Sample Weight-73.36g		Soil % Moisture	9.2	%
		Air Flow Rate Through ME Opening of Dust Generator:	1370	
Not Used		Air Flow Rate Through IST Opening of Dust Generator:	100	
Used in Tumbler		Estimate Total Air Flow Through Elutriator:	1470	

Analytical Sensitivity:	2.96E+06 Structure /g PM 10	Limit of Detection:	8.87E+06 Structure /g PM 10

Test For Uniformity (Chi-Square results)

		Counts		Poisson 95% Confidence Interval			
Structure Class	**Min ID Level Required**	**Primary Str.**	**Total Str.**	**Density** St/mm^2	**Conc.** Str/g PM10	**Lower Limit** Str/g PM10	**Upper Limit** Str/g PM10
Asbestos Structures>5um, ≤10um	ADX/CD	1	1	1.05	2.96E+06	7.50E+04	1.65E+07
Asbestos Structures>5um, ≤10um (Chrys)	CD	1	1	1.05	2.96E+06	7.50E+04	1.65E+07
Asbestos Structures>5um, ≤10um (Amph)	ADX	0	0	0	0	0	8.87E+06
Asbestos Structure >10um (Long)	ADX/CD	0	0	0	0	0	8.87E+06
Asbestos Structure >10um (Chrys)	CD	0	0	0	0	0	8.87E+06
Asbestos Structure >10um (Amph)	ADX	0	0	0	0	0	8.87E+06
Total Protocol Asbestos Structures	ADX/CD	1	1	1.05	2.96E+06	7.50E+04	1.65E+07
Protocol Asbestos Structures (Chrys)	CD	1	1	1.05	2.96E+06	7.50E+04	1.65E+07
Protocol Asbestos Structures (Amph)	ADX	0	0	0	0	0	8.87E+06
Total Protocol Non Asbestos Structures	**NAM**	1	1	1.05	2.90E+06	7.50E+04	1.65E+07

Approved by Technical Director

EMS Laboratories

NIOSH 7402/ISO
117 W. Bellevue Drive
Pasadena, CA 91105
626-568-4065

Client:	Derrick Willis, Tronox LLC-Henderson	**Filter Type:**	PC 385 mm^2
Report number :	137821	**Magnification:**	9200
Sample number:	SSAK5-03-0.00BPC	**Grid Opening Dimension: mm^2**	0.0094
Project:	2027.001/Tronox LLC Henderson, 560 W. Lake Mead Dr.,	**Grid Loading:** Light Moderate	

Elutriation Date: 7/1/2010 by
Preparation Date: 7/7/2010 by Joel Paruli
Analysis Date: 7/8/2010 by Radha Singh

Asbestos Structures>5um, ≤10um (Chrys)	1	**Grid Openings**	101
Asbestos Structures>5um, ≤10um (Amph)	0	**Mass - ug**	137
Asbestos Structure >10um (Chrys)	0	**Anlytical sensitivity**	[redacted]
Asbestos Structure >10um (Amph)	0		
Protocol Asbestos Structures (Chrys)	1		
Protocol Asbestos Structures (Amph)	0		

Grid ID	Grid Opening	Structure Type	Structure Number Primary	Structure Number Total	Dimensions - mm Width	Dimensions - mm Length	Dimensions (µm) Width	Dimensions (µm) Length	Level of ID	Mineral Type	Image Number	Structure Comments
1A	E31	None Detected										
1A	F31	None Detected										
1A	G31	None Detected										
1A	C41	None Detected										
1A	E41	None Detected										
1A	F41	None Detected										
1A	C51	None Detected										
1A	E51	None Detected										
1A	F51	None Detected										
1A	G51	None Detected										
1A	H51	None Detected										
1A	K51	None Detected										
1A	C61	None Detected										
1A	E61	None Detected										
1A	F61	None Detected										
1A	G61	None Detected										
1A	C23	None Detected										
1A	E23	None Detected										
1A	F23	None Detected										
1A	H23	None Detected										
1B	C31	None Detected										
1B	E31	None Detected										
1B	F31	None Detected										
1B	G31	MD11	1		68	110	7.39	11.96	CD	CHRYSOTILE		
		MF		1	2.5	89	0.27	9.67	CD	CHRYSOTILE		
1B	H31	None Detected										
1B	C41	None Detected										
1B	E41	None Detected										
1B	F41	None Detected										
1B	H41	None Detected										
1B	K41	None Detected										
1B	C51	None Detected										
1B	E51	None Detected										
1B	F51	None Detected										
1B	G51	None Detected										
1B	K51	None Detected										
1B	C64	None Detected										
1B	E64	None Detected										
1B	F64	None Detected										
1B	G64	None Detected										
1B	H61	None Detected										
1C	C31	None Detected										
1C	E31	None Detected										

EMS Laboratories

NIOSH 7402/ISO

117 W. Bellevue Drive
Pasadena, CA 91105
626-568-4065

Report Number:	
Sample number:	

Analyzed by:	
Date of Analysis:	

Grid ID	Grid Opening	Structure Type	Structure Number				Dimensions (µm)		Level of ID	Mineral Type	Image Number	Structure Comments
			Primary	Total			Width	Length				
1C	F31	None Detected										
1C	G31	None Detected										
1C	H31	None Detected										
1C	C41	None Detected										
1C	E41	None Detected										
1C	F41	None Detected										
1C	G41	None Detected										
1C	H41	None Detected										
1C	K41	None Detected										
1C	C51	None Detected										
1C	E51	None Detected										
1C	F51	None Detected										
1C	G51	None Detected										
1C	H51	None Detected										
1C	K51	None Detected										
1C	C61	None Detected										
1C	E61	None Detected										
1C	F61	None Detected										
1D	B26	None Detected										
1D	C26	None Detected										
1D	F26	None Detected										
1D	G26	None Detected										
1D	B31	None Detected										
1D	B36	None Detected										
1D	C36	None Detected										
1D	E36	None Detected										
1D	G36	None Detected										
1D	G31	None Detected										
1D	B33	None Detected										
1D	C33	None Detected										
1D	E33	MD11	2		110	335	11.96	36.41	CD	CHRYSOTILE		
1D		MB		2	18	310	1.96	33.70	CD	CHRYSOTILE		
1D	G33	None Detected										
1D	H33	None Detected										
1D	K33	None Detected										
1D	G43	None Detected										
1D	H43	None Detected										
1D	K43	None Detected										
1E	E21	None Detected										
1E	F21	None Detected										
1E	C31	None Detected										
1E	E31	None Detected										
1E	F31	None Detected										
1E	G31	None Detected										
1E	H31	None Detected										
1E	C41	None Detected										
1E	E41	None Detected										
1E	F41	None Detected										
1E	G41	None Detected										
1E	H41	None Detected										
1E	C51	None Detected										
1E	E51	None Detected										
1E	F51	None Detected										
1E	G51	None Detected										
1E	H51	None Detected										
1E	K51	None Detected										
1E	E53	None Detected										
1E	G53	None Detected										
1E	K43	None Detected										
1E	F64	None Detected										

Elutriator Data

Date: 7/1/10 Client: Northgate

Lab #: 137821.

Sample ID: SSAK5-03-0.003PC Sample weight (g): 73.36

Time air flow started: 800 Tumbler rpm: 30

IST Flowmeter (mL/min): 100 ME Flowmeter (mL/min): 1370

Filter No.	Start Time	Tested flow rate (mL/min)	Final Filter Wt (mg)	Initial Filter Wt (mg)	Dust Weight (mg)	Time Value (min)	Avg. rate of deposition (ug/min)	Optimal time (min)	
1	0900	170	0.03004	0.02451	5.53	30			
2	0930		0.02935	0.02430	5.05	1520 M			loss 10%
3	0950 M		0.03015	0.02441	5.74	25			loss 60%
4	1110		0.03182	0.02456	7.26	20			OK
5	1130		0.02650	0.02442	2.08	20			loss 80%
6	1150			0.02449					
7				0.02423					
8				0.02443					
	Time						Dep. Rate	Estiimate	
1	1100	1109		4.400		9			
2	1117	1125		4.423		8			
3	1138	1147	~~4.554~~ 4.560	4.367	~~156~~ 137	9			prep 7/09/10
4									
5									
6									
7									
8									
9									

137821 Moisture content

6-9-10

#SSAN5-02.0.00 BPC
dish wt. 19.24
dish + samp. 119.65 - 19.24 = 100.41 g (initial wt.)
10:40 - 11:40 111.91 - 19.24 = 92.67
12:30 - 1:30 111.90 - 19.24 = 92.46
1:30 - 2:30 111.65 - 19.24 = 92.41 (Final wt.)

$$\% \text{ moist.} \quad 100 \times \frac{100.41 - 92.41}{92.41} = 8.66\ \%$$

137821 #SSAK5-03-0.00 BPC
dish wt. 31.45
dish + samp. 131.57 - 31.45 = 100.12 g (initial wt.)
10:40 - 11:40 123.43 - 31.45 = 92.12
11:40 - 1:30 123.13 - 31.45 = 91.68
1:30 - 2:30 123.10 - 31.45 = 91.65 (Final wt.)

$$\% \text{ Moist.} \quad 100 \times \frac{100.12 - 91.65}{91.65} = 9.24\ \%$$

#SSAL5-02-0.00 BPC
dish wt. 31.45
dish + samp. 131.48 - 31.45 = 100.03 g (initial wt.)
10:40 - 11:40 127.66 - 31.45 = 96.21
11:40 - 1:30 127.47 - 31.45 = 96.02
1:30 - 2:30 127.45 - 31.45 = 96.00

$$\text{Moist.} \quad 100 \times \frac{100.03 - 96.00}{96.00} = 4.2\ \%$$

BP

Count (Page of) NIOSH 7402/ISO — **Prep Time: 12[00] 230**

Report number : 137821
Sample number: SSAKS-03-0.00 BPC
File name: Northgate
Sample Description: 137 mg

Filter Type: PC 385 mm2
Date Sample was Run: 7/1/10
Magnification: 9,200 X

Preparation date: 7/7/10 By JAP
Analysis date: 7/8/10 By
Grid loading Lt Moderate
(A): ADX, ADQ
Condition of Grid Good

Grid opening dimension: 0.0094 mm^2
Level of Analysis: (C): CD, CDX

Grid	Grid Opening	Number of structures Primary	Number of structures Total	Class	Type of Structure	Width mm	Length mm	Comments
A	E31	NSD						
	F31	NSD						
	G31	NSD						
	C41	NSD						
	E41	NSD						
	F41	NSD						
	C51	NSD						
	E51	NSD						TASiO CF
	F51	NSD						
	G51	NSD						Talc MF7 <5 u
	H51	NSD						
	K61	NSD						
	C61	NSD						
	E61	NSD						Talc F >5K
	F61	NSD						" <5K
	G61	NSD						
	C23	NSD						Crazy B <5u
	E23	NSD						
	F23	NSD						
	H23	NSD						
B	C31	NSD						
	E31	NSD						
	F31	NSD						
	G31	1			MD1/1	69	110	3541
			1		MF	2.5	89	CNM
	H31	NSD						
	C41	NSD						
	E41	NSD						
	F41	NSD						
	H41	NSD						
	K41	NSD						
	C51	NSD						

TEM Asbestos Structure Count (Page 2 of)

Report number: 137821 SAMPLE NO: SSAKS-03-0.00 BPC X 9,200

Grid	Grid Opening	Number of structures primary	Number of structures Total	Class	Type of Structure	Width Mm	Length Mm	Comments
	E51	NSD						
	F51	NSD						
	G51	NSD						
	K51	NSD						
	C64	NSD						
	E64	NSD						
	F64	NSD						
	G64	NSD						
	H61	NSD						
	C31	NSD						
	E31	NSD						
	F31	NSD						
	G31	NSD						
	H31	NSD						
	C41	NSD						
	E41	NSD						
	F41	NSD						
	G41	NSD						
	H41	NSD						
	K41	NSD						
	C51	NSD						
	E51	NSD						
	F51	NSD						
	G51	NSD						
	H51	NSD						NSD MD <5K
	K51	NSD						
	C61	NSD						
	E61	NSD						Non Asb F <5K
	F61	NSD						
	B26	NSD						
	C26	NSD						Non Asb MDF <5K
	F26	NSD						
	G26	NSD						
	B51	NSD						
	B36	NSD						
	C36	NSD						
	E36	NSD						
	G36	NSD						

Blank - a few holes, all other grids perfect

TEM Asbestos Structure Count (Page of)

Report number: 137821 SAMPLE NO: SSAK5-03-0.00BPC X 9,200

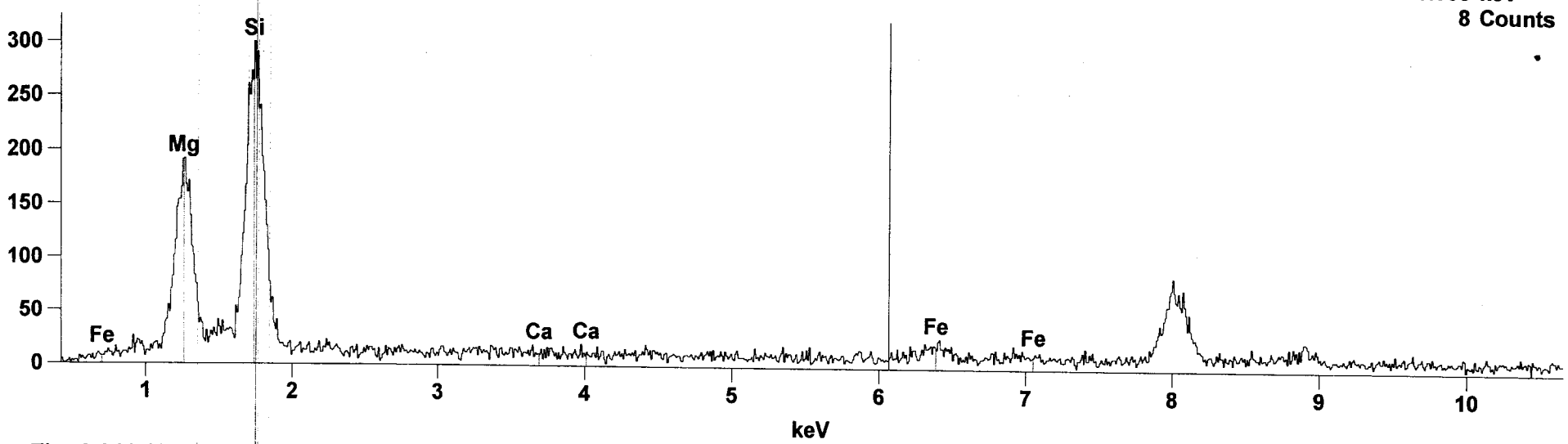
Grid	Grid Opening	Number of structures primary	Number of structures Total	Class	Type of Structure	Width Mm	Length Mm	Comments
	G31	NSD						
	B33	NSD						
	C33	NSD						
	E33	2			MD11	110	326	SAED 3545 Chry
			2		MB	18	310	+ 4F < 5μ
	G32	NSD						
	H33	NSD						
	K33	NSD						
	G43	NSD						
	H43	NSD						
	K43	NSD						
E	E21	NSD						
	F21	NSD						
	C31	NSD						
	E31	NSD						
	F31	NSD						
	G31	NSD						
	H21	NSD						
	C41	NSD						
	E41	NSD						Agglo F > 5μ
	F41	NSD						< 5μ
	G41	NSD						
	H41	NSD						
	C51	NSD						
	E51	NSD						
	F51	NSD						
	G51	NSD						
	H51	NSD						
	K51	NSD						Tr F < 5μ
	E53	NSD						
	G53	NSD						
	K43	NSD						
	K6-4	NSD						

Project: July2010

Full scale counts: 301

137821 SSAKS-03-0 00BPC GRID D GO E33

Cursor: 6.066 keV
8 Counts



Thu Jul 08 18:23:18 2010
Gaussian Fit Chi Squared:1.652
Correction Method: Cliff-Lorimer (MBTS) w/o Absorbance

Live Time:24.9 sec.

Quantitative Results 137821 SSAKS-03-0 00BPC GRID D GO E33

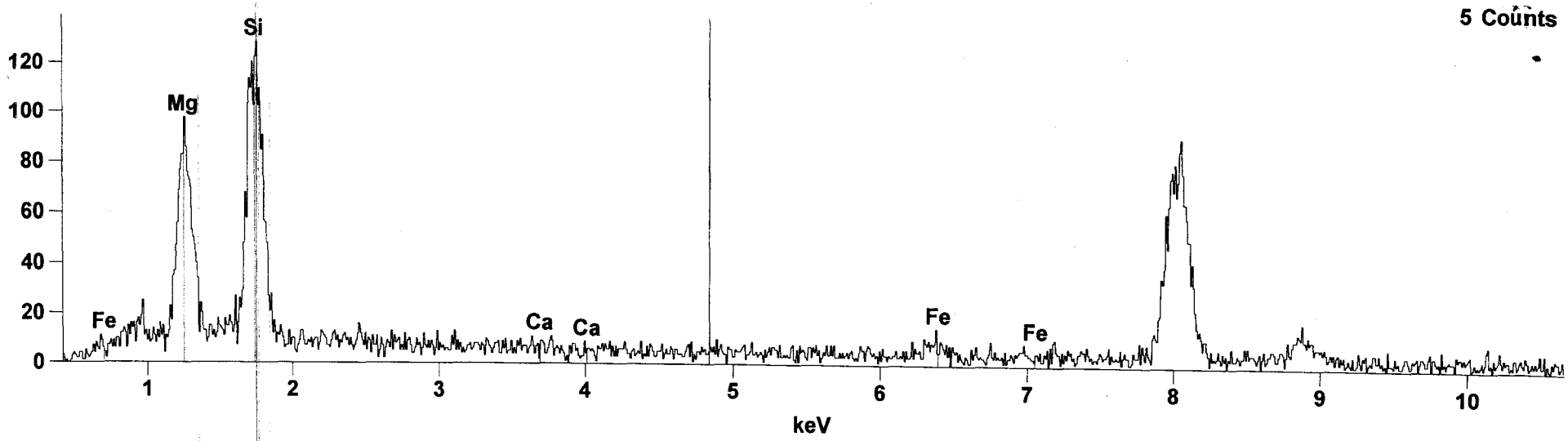
Element	Net Counts	Weight %	Weight % Error	Atom %	Atom % Error
Mg	2693	42.54	+/- 0.85	46.77	+/- 0.94
Si	4346	54.16	+/- 0.86	51.53	+/- 0.82
Ca	68	0.62	+/- 0.16	0.41	+/- 0.11
Ca	5	---	---	---	---
Fe	253	2.68	+/- 0.26	1.28	+/- 0.13
Fe	52	---	---	---	---
Total		100.00		100.00	

Project: July2010

Full scale counts: 129

137821 SSAKS -03-0.00 BPC GRID B GO G31

Cursor: 4.836 keV
5 Counts



Thu Jul 08 16:40:23 2010
Gaussian Fit Chi Squared:0.467
Correction Method: Cliff-Lorimer (MBTS) w/o Absorbance

Live Time:42.6 sec.

Quantitative Results 137821 SSAKS -03-0.00 BPC GRID B GO G31

Element	Net Counts	Weight %	Weight % Error	Atom %	Atom % Error
Mg	972	44.46	+/- 1.60	48.46	+/- 1.74
Si	1486	53.62	+/- 1.52	50.58	+/- 1.43
Ca	10	0.26	+/- 0.32	0.17	+/- 0.21
Ca	0	---	---	---	---
Fe	54	1.66	+/- 0.43	0.79	+/- 0.20
Fe	4	---	---	---	---
Total		100.00		100.00	

Copy 1

Count (Page of) NIOSH 7402/ISO

Report number : 137822 Filter Blank2 (INST) Filter Type: MCE 385 mm2 Prep Time: NA
Sample number: 00105200 Date Sample was Run: NA
File name: Northgate
Sample Description: NA mg Magnification: 9,200 X

Preparation date: 7/9/2010 By JAP Grid opening dimension:0.0094 mm^2
Analysis date: 7/10 By BK, RS. Level of Analysis: (C): CD, CDX
(A): ADX, ADQ

Grid loading Light Condition of Grid Good

Grid	Grid Opening	Number of structures Primary	Number of structures Total	Class	Type of Structure	Width mm	Length mm	Comments
A	E21							
	E24							
	F21							
	F24							
	G21							
	G24							
	B26							
	C23							
	C26							
	E23							
	E26							
	F23							
	F26							
	G23							
	G26							
	F34							
	G31							
	G34							
	H31							
	H34							
	K34							
	F36							
	G33							
	G36							
	H33							
	H36							
	K33							
	K36							
	B46							
	C42							
	C46							
	E45							

Count (Page of) NIOSH 7402/ISO

Report number : 137822 ~~Filter Blank~~ Front2
Sample number: 00105200
File name: Northgate
Sample Description: NA mg

Filter Type: MCE 385 mm2 Prep Time: NA
Date Sample was Run: NA

Magnification: 9,200 X

Preparation date: 6/8/2010 By JAP
Analysis date: 9-10 By BK

Grid opening dimension:0.0094 mm^2
Level of Analysis: (C): CD, CDX
(A): ADX, ADQ

Grid loading
Condition of Grid

Grid	Grid Opening	Number of structures Primary	Number of structures Total	Class	Type of Structure	Width mm	Length mm	Comments
	E46							
	B5C							
	C53							
	C56							
	E33							
	E56							
	C61							
	FC4							
10	E26							
	F23							
	F26							
	G23							
	G21							
	C34							
	E31							
	E34							
	F31							
	F34							
	G31							
	G34							
	F33							
	F36							
	G33							
	G36							
	H33							
	F44							
	G41							
	G44							
	H41							
	H44							
	K41							
	K44							

Reviewed Settles

Count (Page 7 of) NIOSH 7402/ISO Part

Report number : 137822 ~~Filter~~ Blank1 Filter Type: MCE 385 mm2 Prep Time: NA
Sample number: 00105200 Date Sample was Run: NA
File name: Northgate
Sample Description: NA mg Magnification: 9,200 X

Preparation date: 6/8/2010 By JAP Grid opening dimension:0.0094 mm^2
Analysis date: By Level of Analysis: (C): CD, CDX
(A): ADX, ADQ
Grid loading Condition of Grid

Grid	Grid Opening	Number of structures Primary	Number of structures Total	Class	Type of Structure	Width mm	Length mm	Comments
	G4L							
	H4G							
	H4L							
	K43							
	K4L							
	E5L							
	E51							
	G51							
	G54							
	H51							
	H54							
	K51							
	K54							
	E51							
	G53							
	G54							
C	C2-6							
	E2-3							
	E2-6							
	E2-3							
	E2-6							
	G2-3							
	G2-6							
	H2-3							
	C3-1							
	C3-4							
	E3-1							
	E3-4							
	E3-1							
	E3-4							

137822

00105200

Normgah

4

TEM Asbestos Structure Count (Page of)

5

Report number: SAMPLE NO: X 9,200

Grid	Grid Opening	Number of structures primary	Number of structures Total	Class	Type of Structure	Width Mm	Length Mm	Comments
C	G3-4							
	G3-4							
	ID-1							
	H2-4							
	C3-3							
	C3-6							
	E3-3							
	E3-6							
	F3-3							
	F3-6							
	G3-3							
	G3-6							
	H2-3							
	ID-6							
	C4-1							
	C4-4							
	E4-1							
	E4-4							
	IC4-1							
3Y	E4-4							
	G4-1							
	G4-4							
	E4-3							
	E4-6							
	IC4-3							
	IC4-6							
	G4-3							
	G4-6							
ID	C2-6							
	E2-3							
	E2-6							
	F2-3							
	F2-6							
	G2-3							
	G2-6							

137822

00105200

Normyata

TEM Asbestos Structure Count (Page of)

Report number: SAMPLE NO: X 9,200

Grid	Grid Opening	Number of structures primary	Number of structures Total	Class	Type of Structure	Width Mm	Length Mm	Comments
D6b	C3-1							
	C3-4							
	E3-1							
	E3-4							
	F3-1							
	F3-4							
	G3-1							
	G3-4							
	I3-1							
	I3-4							
	C3-3							
	C3-6							
	E3-3							
	E3-6							
	F3-3							
	F3-6							
	G3-3							
	G3-6							
	I3-3							
	I3-6							
	C4-1							
	C4-4							
	E4-1							
	E4-4							
	F4-1							
	F4-4							
	G4-1							
	G4-4							
	H4-1							
	H4-4							
	C4-3							
	C4-6							
	G4-3							
	G4-6							
	H4-3							
	H4-6							
1E	C2-6							

137822

00105200

Normgate

TEM Asbestos Structure Count (Page of)

Report number: SAMPLE NO: X 9,200

Grid	Grid Opening	Number of structures primary	Number of structures Total	Class	Type of Structure	Width Mm	Length Mm	Comments
E (not)	E23							
	E26							
	F23							
	F26							
	G23							
	G26							
	H23							
	E3-1							
	E3-4							
	F3-1							
	F3-4							
	G3-1							
	G3-4							
	H3-1							
	H3-4							
	C3-3							
	C3-6							
	E3-3							
	E3-6							
	G3-3							
	C4-1							
	C4-4							
	E4-1							
	E4-4							
	F4-1							
	F4-4							
	G4-1							
	G4-4							
	C5-1							
	C5-4							
	E5-1							
	E5-4							
	F5-1							
	F5-4							
	G5-1							
	G5-4							
	H5-1							
	H5-4							

K5-1

137822

00105200

Normyak

TEM Asbestos Structure Count (Page of)

Report number: SAMPLE NO: X 9,200

Grid	Grid Opening	Number of structures primary	Number of structures Total	Class	Type of Structure	Width Mm	Length Mm	Comments
E	ES-3							
	ES-6							
	FS-3							
	FS6							
	453							

Filter Lot Blank

Count (Page of) NIOSH 7402/ISO

Prep Time: NA

Report number: 137822 Filter Blank 1
Sample number: 00105200
File name: Northgate
Sample Description: NA mg

Filter Type: MCE 385 mm2
Date Sample was Run: NA

Magnification: 9,200 X

Preparation date: 6/8/10 By JAP
Analysis date: 6/9/10 By BC

Grid opening dimension: 0.0094 mm²
Level of Analysis: (C): CD, CDX
(A): ADX, ADQ

Grid loading Very Light Condition of Grid Broad

Grid	Grid Opening	Number of structures Primary	Number of structures Total	Class	Type of Structure	Width mm	Length mm	Comments
A	C26							
	E23							
	E24							
	E22							
	F26							
	C23							
	C31							
	C24							
	E31							
	E34							
	F31							
	F34							
	G31							
	G34							
	H31							
	B44							
	C41							
	C44							
	E41							
	E44							
	F41							
	F44							
	G41							
	G44							
	H41							
	H44							
	K41							
	K44							
	C51							
30	C54							
	E51							
	E54							

TEM-10A (2002)

Count (Page 1 of) NIOSH 7402/ISO

Report number : 137822 Filter Blank1
Sample number: 00105200
File name: Northgate
Sample Description: NA mg

Filter Type: MCE 385 mm2 Prep Time: NA
Date Sample was Run: NA

Magnification: 9,200 X

Preparation date: 6/8/2010 By JAP
Analysis date: By

Grid opening dimension:0.0094 mm^2
Level of Analysis: (C): CD, CDX

(A): ADX, ADQ

Grid loading Condition of Grid

Grid	Grid Opening	Number of structures Primary	Number of structures Total	Class	Type of Structure	Width mm	Length mm	Comments
	F51							
	F54							
	G51							
	G54							
	H51							
	H54							
	K51							
	G61							
B	C26							
	E23							
	E26							
	F22							
	F26							
	G22							
	G26							
	B36							
	C32							
	C36							
	E22							
	E36							
	F33							
	F36							
	H33							
	H36							
	K33							
	K36							
	B46							
	C43							
	C46							
	G43							
	E46							
	F43							

Count (Page 7 of) NIOSH 7402/ISO

Report number : 137822 Filter Blank1
Sample number: 00105200
File name: Northgate
Sample Description: NA mg

Filter Type: MCE 385 mm2 Prep Time: NA
Date Sample was Run: NA

Magnification: 9,200 X

Preparation date: 6/8/2010 By JAP
Analysis date: By

Grid opening dimension:0.0094 mm^2
Level of Analysis: (C): CD, CDX

(A): ADX, ADQ

Grid loading Condition of Grid

Grid	Grid Opening	Number of structures Primary	Number of structures Total	Class	Type of Structure	Width mm	Length mm	Comments
	F46							
	G43							
	G46							
	H43							
	H46							
	K43							
	K46							
	C53							
	C56							
	E53							
	E56							
	F53							
	F56							
	G53							
	G56							
	H53							
C	B24							
	C31							
	C34							
	E31							
	E34							
	F31							
	F34							
	G31							
	G34							
	H31							
	H34							
	B41							
	B44							
	C41							
	C44							
	E41							

TEM -10A (2002)

Count (Page 4 of) NIOSH 7402/ISO

Report number : 137822 Filter Blank1
Sample number: 00105200
File name: Northgate
Sample Description: NA mg

Filter Type: MCE 385 mm2 Prep Time: NA
Date Sample was Run: NA

Magnification: 9,200 X

Preparation date: 6/8/2010 By JAP
Analysis date: By

Grid opening dimension:0.0094 mm^2
Level of Analysis: (C): CD, CDX
(A): ADX, ADQ

Grid loading
Condition of Grid

Grid	Grid Opening	Number of structures Primary	Number of structures Total	Class	Type of Structure	Width mm	Length mm	Comments
	E44							
	F41							
	F44							
	G41							
	G44							
	H41							
	H44							
	K41							
	B51							
	B54							
	C51							
	C54							
	E51							
	E54							
	F51							
	F54							
	G51							
	G54							
	H51							
	H54							
	C61							
	C61							
	E64							
	E61							
B	C23							
	C26							
	E23							
	F26							
	F23							
	G23							
	G26							
	H23							

TEM -10A (2002)

D grid torn when placed in grid box

Count (Page 5 of) NIOSH 7402/ISO

Report number : 137822 Filter Blank1
Sample number: 00105200
File name: Northgate
Sample Description: NA mg

Filter Type: MCE 385 mm2 Prep Time: NA
Date Sample was Run: NA

Magnification: 9,200 X

Preparation date: 6/8/2010 By JAP
Analysis date: By

Grid opening dimension:0.0094 mm^2
Level of Analysis: (C): CD, CDX

(A): ADX, ADQ

Grid loading Condition of Grid

Grid	Grid Opening	Number of structures Primary	Number of structures Total	Class	Type of Structure	Width mm	Length mm	Comments
	B3 6							
	C 3 3							
	C 3 6							
	E 3 3							
	E 3 6							
	F 3 3							
	F 3 6							
	G 3 3							
	G 3 6							
	H 3 3							
	H 3 6							
	B 4 6							
	C 4 3							
	C 4 6							
	E 4 3							
	E 4 6							
	F 4 3							
	F 4 6							
	G 4 3							
	G 4 6							
	H 4 3							
	H 4 6							
	K 4 3							
	K 4 6							
	B 5 6							
	C 5 3							
	C 5 6							
	E 5 3							
	E 5 6							
	F 5 3							
	F 5 6							
	G 5 3							

Count (Page 6 of 7) NIOSH 7402/ISO

Report number : 137822 Filter Blank1
Sample number: 00105200
File name: Northgate
Sample Description: NA mg

Filter Type: MCE 385 mm2 Prep Time: NA
Date Sample was Run: NA

Magnification: 9,200 X

Preparation date: 6/8/2010 By JAP
Analysis date: By

Grid opening dimension:0.0094 mm^2
Level of Analysis: (C): CD, CDX

(A): ADX, ADQ

Grid loading Very Light Condition of Grid Good

Grid	Grid Opening	Number of structures Primary	Number of structures Total	Class	Type of Structure	Width mm	Length mm	Comments
E	B 3 1							
	B 3 4							2 of fiber bundle < 5u
	C 3 1							
	C 3 4							
	D 3 1							
	D 3 4							
	E 3 1							
	E 3 4							
	F 3 1							
	F 3 4							
	G 3 1							
	G 3 4							
	H 3 1							
	H 3 4							
	B 4 1							
	B 4 4							
	C 4 1							
	C 4 4							
	E 4 1							
	E 4 4							
	F 4 1							
	F 4 4							
	G 4 1							
	G 4 4							
	H 4 1							
	H 4 4							
	K 4 1							
	K 4 4							
	B 5 4							
	C 5 1							
	C 5 4							
	E 5 1							
	E 5 4							
	F 5 1							

TEM -10A (2002)

Count (Page 7 of 7) NIOSH 7402/ISO

Report number : 137822 Filter Blank1 Filter Type: MCE 385 mm2 Prep Time: NA
Sample number: 00105200 Date Sample was Run: NA
File name: Northgate
Sample Description: NA mg Magnification: 9,200 X

Preparation date: 6/8/2010 By JAP Grid opening dimension:0.0094 mm^2
Analysis date: By Level of Analysis: (C): CD, CDX
(A): ADX, ADQ
Grid loading Condition of Grid

Grid	Grid Opening	Number of structures Primary	Number of structures Total	Class	Type of Structure	Width mm	Length mm	Comments
	E54							
	G51							
	C54							
	H51							
	H54							
	K51							
	EC1							
	E64							

TEM -10A (2002)

TEM ASBESTOS ANALYSIS

Client: Sand blank
Sample No.: 5-12-10

EMS Lab No. _____
Page _____ of _____

RECEIVING

TYPE OF SAMPLE
Air ☐ Water ☐
Soil ☐ Bulk ☐
Other: Sand

METHOD OF ANALYSIS
EPA 600/4-83-043 ☐ ISO ☐

LEVEL OF ANALYSIS
Chrysotile _____
Amphibole _____

ASPECT RATIO
3:1 ☐ 5:1 ☐

EPA/600/R-94/134 100.1 ☐ 100.2 ☐

LENGTHS
All Sizes (EPA) ☐
(μm) ≥0.5 ☐
≥1.0 ☐
≥5.0 ☐
≥10.0 ☐
PCM Range* ☐
*(≥0.25 μm width ≥5.0 μm length)

FILTER TYPE / AREA (mm±)
MCE ☐ 385 ☐
PC ☐ 314 ☐
MCN ☐ 1017 ☐
Other _____

PORE SIZE
0.45 μm ☐ 0.8 μm ☐
0.1 μm ☐ 0.22 μm ☐
Other _____

G.O. Area (mm²) 0.0 0.094
No. of G.O. to Analyze 200
67/grid

PREP

DIRECT PREP ☐
INDIRECT PREP ☐

Volume _____ liters
Working Volume _____ ml
Weight 50 grams
Ashed Area _____ %

Prepared By JAP
Date 5/12/10

ANALYSIS

MICROSCOPE
H600A - Serial No. 542-36-01 ☐
H600B - Serial No. 542-05-06 ☑
H600C - Serial No. 542-24-03 ☐

ENERGY DISPERSIVE X-RAY SYSTEM
Kevex - Model No. 3200-0106-0365 ☐
Kevex - Model No. 3600-0206-0146 Quantum System ☑

Grid Address: A
Screen Magnification: 9800 X
Camera Constant: 2.43
Accelerating Voltage: 100KV
Beam Current: 10 μA
K-Factor: 1.4
Analyst Kadh Date 5/13/10

Grid Opening	Structure Number	Structure	Dimensions (mm) Width	Dimensions (mm) Length	Fiber Classification NAM	TM	CM	CD	CQ	CMQ	CDQ	UF	AD	AX	AIX	AQ	ADQ	AZQ	AZZ	EDS Analysis Na	Mg	Si	Ca	Fe	Comments
C23		NAD																							
C26										/															
E23																									
E26																									
F23																									
F26																									
G23																									
G26																									
H23																									
C31																									
C34		1=	4.5	7.5	✓																	Si			
E31		↓																							
E34		NAD																							
F31																									
F34		↓																							

TEM - 1A (1-08)

OBSERVATIONS:

Clean ☐
Debris: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐
Gypsum: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐
Condition of the Grid: ☐ Good ☐ Scrappy ☐ Undissolved Filter ☐ Folded ☐

EMS LABORATORIES 117 West Bellevue Drive • Pasadena, California 91105-2548 • (626) 568-4065

TEM ASBESTOS ANALYSIS

Client Sand blank
Sample No. 5-12-10

EMS Lab No. _____
Page 2 of _____

RECEIVING

ANALYSIS

Grid Address: A
Screen Magnification: _____ X
Camera Constant: _____
Accelerating Voltage: 100KV
Beam Current: _____ µA
K-Factor: _____

Analyst _____ Date _____

MICROSCOPE
H600A - Serial No. 542-36-01 ☐
H600B - Serial No. 542-05-06 ☒
H600C - Serial No. 542-24-03 ☐

ENERGY DISPERSIVE X-RAY SYSTEM
Kevex - Model No. 3200-0106-0365 ☐
Kevex - Model No. 3600-0206-0146 Quantum System ☒

Grid Opening	Structure Number	Structure	Dimensions (mm) Width	Dimensions (mm) Length	Fiber Classification NAM	TM	CM	CD	CQ	CMQ	CDQ	UF	AD	AX	ADX	AQ	ADQ	AZQ	AZZ	EDS Analysis Na	Mg	Si	Ca	Fe	Comments
G3-1		NAD																							
G3-4																									
TB-1																									
TB-4																									
C3-3																									
E3-6																									
E3-3																									
E3-6																									
F3-3																									
F3-6																									
G3-3																									
G3-6																									
TB-3																									
TB-6																									
K3-3																									

OBSERVATIONS:

Clean ☐
Debris: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐
Gypsum: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐
Condition of the Grid: ☐ Good ☐ Scrappy ☐ Undissolved Filter ☐ Folded ☐

TEM - 1B (1-08)

TEM ASBESTOS ANALYSIS

Client Sand blank
Sample No. 5-1270

EMS Lab No. _____
Page 3 of _____

RECEIVING

ANALYSIS

Grid Address: A
Screen Magnification: _____ X
Camera Constant: _____
Accelerating Voltage: 100KV
Beam Current: _____ µA
K-Factor: _____
Analyst Rodk Date 5-13-10

MICROSCOPE
H600A - Serial No. 542-36-01 ☐
H600B - Serial No. 542-05-06 ☐
H600C - Serial No. 542-24-03 ☐

ENERGY DISPERSIVE X-RAY SYSTEM
Kevex - Model No. 3200-0106-0365 ☐
Kevex - Model No. 3600-0206-0146 Quantum System ☐

Grid Opening	Structure Number	Structure	Dimensions (mm) Width	Dimensions (mm) Length	Fiber Classification NAM	TM	CM	CD	CQ	CMQ	CDQ	UF	AD	AX	ADX	AQ	ADQ	AZQ	AZZ	EDS Analysis Na	Mg	Si	Ca	Fe	Comments
C4-1		NAM																							
C4-4																									
E4-1																									
E4-4																									
F4-1																									
F4-4																									
G4-1																									
G4-4																									
H4-1																									
H4-4																									
K4-1																									
K4-4																									
E43																									
E41																									
E43		"																							

TEM - 1B (1-08)

OBSERVATIONS:

Clean ☐
Debris: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐
Gypsum: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐
Condition of the Grid: ☐ Good ☐ Scrappy ☐ Undissolved Filter ☐ Folded ☐

TEM ASBESTOS ANALYSIS

Client Sand blade
Sample No. S-12-10

EMS Lab No. _____
Page 4 of _____

RECEIVING

ANALYSIS

Grid Address: A
Screen Magnification: _____ X
Camera Constant: _____
Accelerating Voltage: 100KV
Beam Current: _____ µA
K-Factor: _____
Analyst Radle Date 5-13-10

MICROSCOPE
H600A - Serial No. 542-36-01 ☐
H600B - Serial No. 542-05-06 ☐
H600C - Serial No. 542-24-03 ☐

ENERGY DISPERSIVE X-RAY SYSTEM
Kevex - Model No. 3200-0106-0365 ☐
Kevex - Model No. 3600-0206-0146 Quantum System ☐

Grid Opening	Structure Number	Structure	Dimensions (mm) Width	Dimensions (mm) Length	Fiber Classification NAM	TM	CM	CD	CQ	CMQ	CDQ	UF	AD	AX	ADX	AQ	ADQ	AZQ	AZZ	EDS Analysis Na	Mg	Si	Ca	Fe	Comments
G43		NAM																							
G46																									
H43																									
H46																									
K43																									
K46																									
ESB																									
ES4																									
F5-1																									
F54																									
G5-1																									
G54																									
H5-1		F	6.5	80	✓																				Si
H54		NAM																							
K5-1																									

TEM - 1B (1-08)

OBSERVATIONS:

Clean ☐
Debris: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐
Gypsum: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐
Condition of the Grid: ☐ Good ☐ Scrappy ☐ Undissolved Filter ☐ Folded ☐

TEM ASBESTOS ANALYSIS

Client: Sand blk
Sample No.: 5-12-10

EMS Lab No. _____
Page 5 of _____

RECEIVING

ANALYSIS

Grid Address: A
Screen Magnification: _____ X
Camera Constant: _____
Accelerating Voltage: 100KV
Beam Current: _____ µA
K-Factor: _____
Analyst: Radke Date: 5-13-10

MICROSCOPE
- H600A - Serial No. 542-36-01 ☐
- H600B - Serial No. 542-05-06 ☐
- H600C - Serial No. 542-24-03 ☐

ENERGY DISPERSIVE X-RAY SYSTEM
- Kevex - Model No. 3200-0106-0365 ☐
- Kevex - Model No. 3600-0206-0146 Quantum System ☐

Grid Opening	Structure Number	Structure	Dimensions (mm) Width	Dimensions (mm) Length	Fiber Classification NAM	TM	CM	CD	CQ	CMQ	CDQ	UF	AD	AX	ADX	AQ	ADQ	AZQ	AZZ	EDS Analysis Na	Mg	Si	Ca	Fe	Comments
C5 3		NM																							
C5 6																									
E5 3																									
E5 6																									
F5 3																									
F5 6																									
H5 3																									
H5 6																									

OBSERVATIONS:

Clean ☐
Debris: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐
Gypsum: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐
Condition of the Grid: ☐ Good ☐ Scrappy ☐ Undissolved Filter ☐ Folded ☐

TEM - 1B (1-08)

TEM ASBESTOS ANALYSIS

Client Sand blank
Sample No. S-12-10

EMS Lab No. _____
Page 1 of _____

RECEIVING

ANALYSIS

Grid Address: B
Screen Magnification: 9,200 X
Camera Constant: 28.3
Accelerating Voltage: 100KV
Beam Current: 10 µA
K-Factor: 14
Analyst Radh Date 5/18/10

MICROSCOPE
H600A - Serial No. 542-36-01 ☐
H600B - Serial No. 542-05-06 ☐
H600C - Serial No. 542-24-03 ☐

ENERGY DISPERSIVE X-RAY SYSTEM
Kevex - Model No. 3200-0106-0365 ☐
Kevex - Model No. 3600-0206-0146 Quantum System ☐

Grid Opening	Structure Number	Structure	Dimensions (mm) Width	Dimensions (mm) Length	Fiber Classification NAM	TM	CM	CD	CQ	CMQ	CDQ	UF	AD	AX	ADX	AQ	ADQ	AZQ	AZZ	EDS Analysis Na	Mg	Si	Ca	Fe	Comments
C23		N/A																							
C26																									
E23																									
E26																									
I23																									
I26																									
G23																									
G26																									
H23																									
C34																									
C3-4																									
E34																									
E3-4																									
F34																									
F34		↓																							

TEM - 1B (1-08)

OBSERVATIONS:

Clean ☐
Debris: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐
Gypsum: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐

TEM ASBESTOS ANALYSIS

Client Sand blank
Sample No. S-12-10

EMS Lab No. _____
Page 1 of _____

RECEIVING

ANALYSIS

Grid Address: B
Screen Magnification: 9,200 X
Camera Constant: 28.3
Accelerating Voltage: 100KV
Beam Current: 10 µA
K-Factor: 1.4
Analyst Radh Date 5/18/10

MICROSCOPE

H600A - Serial No. 542-36-01 ☐
H600B - Serial No. 542-05-06 ☐
H600C - Serial No. 542-24-03 ☐

ENERGY DISPERSIVE X-RAY SYSTEM

Kevex - Model No. 3200-0106-0365 ☐
Kevex - Model No. 3600-0206-0146 Quantum System ☐

Grid Opening	Structure Number	Structure	Dimensions (mm) Width	Dimensions (mm) Length	Fiber Classification NAM	TM	CM	CD	CQ	CMQ	CDQ	UF	AD	AX	ADX	AQ	ADQ	AZQ	AZZ	EDS Analysis Na	Mg	Si	Ca	Fe	Comments
G3-4		NM																							
G5-4																									
1B-4																									
1B-4																									
G3-3		F	2.5	13.0	V.																				
G3-6		NM																							Si
F33																									
F3-6																									
F33																									
F3-6																									
G33																									
G3-6																									
1B3																									
1B-6																									
F3-3		V																							

TEM - 1B (1-08)

OBSERVATIONS:

Clean ☐
Debris: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐
Gypsum: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐

TEM ASBESTOS ANALYSIS

Client Sand blank
Sample No. S-12-10

EMS Lab No. _____
Page 1 of _____

RECEIVING

ANALYSIS

MICROSCOPE
- H600A - Serial No. 542-36-01 ☐
- H600B - Serial No. 542-05-06 ☐
- H600C - Serial No. 542-24-03 ☐

Grid Address: B
Screen Magnification: 9,200 X
Camera Constant: 28.3
Accelerating Voltage: 100KV
Beam Current: 10 µA
K-Factor: 1.4

ENERGY DISPERSIVE X-RAY SYSTEM
- Kevex - Model No. 3200-0106-0365 ☐
- Kevex - Model No. 3600-0206-0146 Quantum System ☐

Analyst Radh Date 5/13/10

Grid Opening	Structure Number	Structure	Dimensions (mm) Width	Dimensions (mm) Length	Fiber Classification NAM	TM	CM	CD	CQ	CMQ	CDQ	UF	AD	AX	ADX	AQ	ADQ	AZQ	AZZ	EDS Analysis Na	Mg	Si	Ca	Fe	Comments
C4-1		NAD																							
C4-4																									
E4-1																									
E4-4																									
F4-1																									
F4-4																									
G4-1																									
G4-4																									
H4-1																									
H4-4																									
K4-1																									
K4-4																									
C4C																									
E4-3																									
E4G		4																							

TEM - 1B (1-08)

OBSERVATIONS:

Clean ☐
Debris: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐
Gypsum: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐

TEM ASBESTOS ANALYSIS

Client Sand blank
Sample No. S-12-10

EMS Lab No. _____
Page 4 of _____

RECEIVING

ANALYSIS

Grid Address: B
Screen Magnification: 9,200 X
Camera Constant: 28.3
Accelerating Voltage: 100KV
Beam Current: 10 µA
K-Factor: 1.4
Analyst Radh Date 5/18/10

MICROSCOPE -
H600A - Serial No. 542-36-01 ☐
H600B - Serial No. 542-05-06 ☐
H600C - Serial No. 542-24-03 ☐

ENERGY DISPERSIVE X-RAY SYSTEM
Kevex - Model No. 3200-0106-0365 ☐
Kevex - Model No. 3600-0206-0146 Quantum System ☐

Grid Opening	Structure Number	Structure	Dimensions (mm) Width	Dimensions (mm) Length	Fiber Classification NAM	TM	CM	CD	CQ	CMQ	CDQ	UF	AD	AX	ADX	AQ	ADQ	AZQ	AZZ	EDS Analysis Na	Mg	Si	Ca	Fe	Comments
E43		W>N																							
E46																									
G43																									
G48																									
I43																									
I46																									
K43																									
K46		F	25	130	✓																				S1
C5-1		N>W																							
C5-4																									
E5-1																									
E5-4																									
F5-1																									
F5-4																									
G5-1		D																							

TEM - 1B (1-08)

OBSERVATIONS:

Clean ☐
Debris: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐
Gypsum: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐

TEM ASBESTOS ANALYSIS

Client Sand blank
Sample No. S-12-10

EMS Lab No. _____
Page 5 of _____

RECEIVING

ANALYSIS

Grid Address: B
Screen Magnification: 9,200 X
Camera Constant: 28.3
Accelerating Voltage: 100KV
Beam Current: 10 µA
K-Factor: 1.4
Analyst Radh Date 5/18/10

MICROSCOPE
H600A - Serial No. 542-36-01 ☐
H600B - Serial No. 542-05-06 ☐
H600C - Serial No. 542-24-03 ☐

ENERGY DISPERSIVE X-RAY SYSTEM
Kevex - Model No. 3200-0106-0365 ☐
Kevex - Model No. 3600-0206-0146 Quantum System ☐

Grid Opening	Structure Number	Structure	Dimensions (mm) Width	Dimensions (mm) Length	Fiber Classification NAM	TM	CM	CD	CQ	CMQ	CDQ	UF	AD	AX	ADX	AQ	ADQ	AZQ	AZZ	EDS Analysis Na	Mg	Si	Ca	Fe	Comments
G5-4		NND																							
H5-4																									
H5-4																									
K5-1																									
E6-1																									
E6-4																									
F6-1																									
F6-4																									
G6-1																									

TEM - 1B (1-08)

OBSERVATIONS:

Clean ☐
Debris: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐
Gypsum: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐

TEM ASBESTOS ANALYSIS

Client Sand bank
Sample No. S-12-10

EMS Lab No. _____
Page 1 of _____

RECEIVING

ANALYSIS

MICROSCOPE

H600A - Serial No. 542-36-01 ☐
H600B - Serial No. 542-05-06 ☐
H600C - Serial No. 542-24-03 ☐

Grid Address: C
Screen Magnification: 9200 X
Camera Constant: 283
Accelerating Voltage: 100KV
Beam Current: 10 µA
K-Factor: 1.4

ENERGY DISPERSIVE X-RAY SYSTEM

Kevex - Model No. 3200-0106-0365 ☐
Kevex - Model No. 3600-0206-0146 Quantum System ☐

Analyst Radu Date 5/13/10

Grid Opening	Structure Number	Structure	Dimensions (mm) Width	Length	Fiber Classification NAM	TM	CM	CD	CQ	CMQ	CDQ	UF	AD	AX	ADX	AQ	ADQ	AZQ	AZZ	EDS Analysis Na	Mg	Si	Ca	Fe	Comments
E23																									
E24																									
F23																									
F24																									
H23		F	1.5	52	✓																				F1
H24																									
H23																									
H26																									
C34																									
C34																									
F33																									
F34																									
F34		F	3.5	55	✓																				S1
F34																									
H37																									

TEM - 1B (1-08)

OBSERVATIONS:

Clean ☐
Debris: ☐ Very Light ☐ Light ☐ Moderate ☒ Heavy ☐ Very Heavy ☐
Gypsum: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐
Condition of the Grid: ☐ Good ☐ Scrappy ☐ Undissolved Filter ☐ Folded ☐

TEM ASBESTOS ANALYSIS

Client Sand bank
Sample No. S-1240

EMS Lab No. _____
Page 2 of _____

RECEIVING

ANALYSIS

Grid Address: C
Screen Magnification: 9200 X
Camera Constant: 283
Accelerating Voltage: 100KV
Beam Current: 10 µA
K-Factor: 1.4
Analyst Rodh Date 5/13/10

MICROSCOPE

H600A - Serial No. 542-36-01 ☐
H600B - Serial No. 542-05-06 ☐
H600C - Serial No. 542-24-03 ☐

ENERGY DISPERSIVE X-RAY SYSTEM

Kevex - Model No. 3200-0106-0365 ☐
Kevex - Model No. 3600-0206-0146 Quantum System ☐

Grid Opening	Structure Number	Structure	Dimensions (mm) Width	Dimensions (mm) Length	Fiber Classification NAM	TM	CM	CD	CQ	CMQ	CDQ	UF	AD	AX	ADX	AQ	ADQ	AZQ	AZZ	EDS Analysis Na	Mg	Si	Ca	Fe	Comments
G3-4		NSD																							
H3-1																									
H3-4																									
K3-1																									
K3-4																									
C3-3																									
C3-6																									
E3-3																									
E3-6																									
F3-3																									
F3-6																									
K3-3																									
K3-6																									
H3-3																									
H3-6		NSD																							

TEM - 1B (1-08)

OBSERVATIONS: Clean ☐ Debris: ☐ Gypsum: ☐ Very Light ☐ Very Light ☐ Light ☐ Light ☐ Moderate ☐ Moderate ☐ Heavy ☐ Heavy ☐ Very Heavy ☐ Very Heavy ☐

TEM ASBESTOS ANALYSIS

Client Sand bank
Sample No. 5-12-10

EMS Lab No. _____
Page 3 of _____

RECEIVING

ANALYSIS

Grid Address: C
Screen Magnification: 9200 X
Camera Constant: 28.3
Accelerating Voltage: 100KV
Beam Current: 10 µA
K-Factor: 1.4
Analyst Radu Date 5/13/10

MICROSCOPE
H600A - Serial No. 542-36-01 ☐
H600B - Serial No. 542-05-06 ☐
H600C - Serial No. 542-24-03 ☐

ENERGY DISPERSIVE X-RAY SYSTEM
Kevex - Model No. 3200-0106-0365 ☐
Kevex - Model No. 3600-0206-0146 Quantum System ☐

Grid Opening	Structure Number	Structure	Dimensions (mm) Width	Dimensions (mm) Length	Fiber Classification NAM	TM	CM	CD	CQ	CMQ	CDQ	UF	AD	AX	ADX	AQ	ADQ	AZQ	AZZ	EDS Analysis Na	Mg	Si	Ca	Fe	Comments
K3		NAD																							
K3																									
C4																									
C4																									
E4																									
E4																									
F4																									
F4																									
G4																									
G4																									
H4																									
H4																									
K4																									
K4																									
E3																									

TEM - 1B (1-08)

OBSERVATIONS:

Clean ☐
Debris: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐
Gypsum: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐

TEM ASBESTOS ANALYSIS

Client Sand Bank
Sample No. 5-12-10

EMS Lab No. _____
Page 4 of _____

RECEIVING

ANALYSIS

Grid Address: C
Screen Magnification: 4200 X
Camera Constant: 28.3
Accelerating Voltage: 100KV
Beam Current: 10 µA
K-Factor: 1.4
Analyst Rod Date 5/13/10

MICROSCOPE
- H600A - Serial No. 542-36-01 ☐
- H600B - Serial No. 542-05-06 ☐
- H600C - Serial No. 542-24-03 ☐

ENERGY DISPERSIVE X-RAY SYSTEM
- Kevex - Model No. 3200-0106-0365 ☐
- Kevex - Model No. 3600-0206-0146 Quantum System ☐

Grid Opening	Structure Number	Structure	Dimensions (mm) Width	Dimensions (mm) Length	Fiber Classification NAM	TM	CM	CD	CQ	CMQ	CDQ	UF	AD	AX	ADX	AQ	ADQ	AZQ	AZZ	EDS Analysis Na	Mg	Si	Ca	Fe	Comments
E4-6		Agg																							
E4-3		↓																							
F4-6																									
G4-3																									
G4-6																									
H4-3		R	2	6	√																				Si
H4-6		Agg																							
I4-3																									
I4-6																									
J4-3																									
J4-6																									
K4-3																									
K4-6																									
L4-3																									
L4-6																									
M4-3		↓																							
M4-6																									

TEM - 1B (1-08)

OBSERVATIONS:

Clean ☐
Debris: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐
Gypsum: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐

TEM ASBESTOS ANALYSIS

Client Sand Bank
Sample No. S-12-10

EMS Lab No. _____
Page 5 of _____

RECEIVING

ANALYSIS

Grid Address: C
Screen Magnification: 9200 X
Camera Constant: 28.3
Accelerating Voltage: 100KV
Beam Current: 10 µA
K-Factor: 1.4
Analyst Rodh Date 5/13/10

MICROSCOPE

H600A - Serial No. 542-36-01 ☐
H600B - Serial No. 542-05-06 ☐
H600C - Serial No. 542-24-03 ☐

ENERGY DISPERSIVE X-RAY SYSTEM

Kevex - Model No. 3200-0106-0365 ☐
Kevex - Model No. 3600-0206-0146 Quantum System ☐

Grid Opening	Structure Number	Structure	Dimensions (mm) Width	Dimensions (mm) Length	Fiber Classification NAM	TM	CM	CD	CQ	CMQ	CDQ	UF	AD	AX	ADX	AQ	ADQ	AZQ	AZZ	EDS Analysis Na	Mg	Si	Ca	Fe	Comments
W5-4		NAD																							
H5-1																									
H5-4																									
K5-1																									
E5-3																									
E5-6																									
F5-3																									
R5-6																									
W5-3																									
W5-6																									

OBSERVATIONS:

Clean ☐
Debris: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐
Gypsum: ☐ Very Light ☐ Light ☐ Moderate ☐ Heavy ☐ Very Heavy ☐

TEM - 1B.(1-08)

Count (Page 1 of) NIOSH 7402/ISO

Report number : 137822 Filter Blank2
Sample number: LOT 00105200
File name: Northgate
Sample Description: NA mg

Filter Type: MCE 385 mm2 Prep Time: NA
Date Sample was Run: NA

Magnification: 9,200 X

Preparation date: 6/8/2010 By JAP
Analysis date: 7/9/10 By

Grid opening dimension:0.0094 mm^2
Level of Analysis: (C): CD, CDX

(A): ADX, ADQ

Grid loading Very Light Condition of Grid Good

Grid	Grid Opening	Number of structures Primary	Number of structures Total	Class	Type of Structure	Width mm	Length mm	Comments
A	C23							
	C26							
	E23							
	E26							
	F23							
	F26							
	G23							
	G26							
	H23							
	H26							
	K23							
	K26							
	C33							
	C36							
	E33							
	E36							
	F33							
	F36							
	G33							
	G36							
	H33							
	H36							
	K33							
	K36							
	E43							
	E46							
	F43							
	F46							
	G43							
	G46							
	H43							
	H46							
	K43							

TEM-10A (2002)

Count (Page 1 of) NIOSH 7402/ISO

Report number :	137822	Filter Blank2	Filter Type: MCE 385 mm2	Prep Time: NA
Sample number:	00105200		Date Sample was Run: NA	
File name:	Northgate			
Sample Description:	NA	mg	Magnification: 9,200 X	
Preparation date:	6/8/2010	By JAP	Grid opening dimension:0.0094 mm^2	
Analysis date:		By	Level of Analysis: (C): CD, CDX	
		(A): ADX, ADQ		
Grid loading		Condition of Grid		

Grid	Grid Opening	Number of structures Primary	Number of structures Total	Class	Type of Structure	Width mm	Length mm	Comments
	C4							
	B5							
	C5							
	C5							
	E5							
	E5							
	F5							
	F5							
B	C2							
	C2							
	E2							
	E2							
	F2							
	F2							
	C3							Organic
	E3							
	F3							
	F3							
	F3							
	B3							
	C3							
	C5							
	E3							
	E5							
	F3							
	F3							
	B4							
	C4							
	C4							
	C4							
	E4							

TEM -10A (2002)

: **Count (Page 2 of) NIOSH 7402/ISO**

Report number :	137822	Filter Blank2	Filter Type: MCE 385 mm2	Prep Time: NA
Sample number:	00105200		Date Sample was Run: NA	
File name:	Northgate			
Sample Description:	NA	mg	Magnification: 9,200 X	

Preparation date: 6/8/2010 By JAP Grid opening dimension:0.0094 mm^2

Analysis date: By Level of Analysis: (C): CD, CDX

(A): ADX, ADQ

Grid loading Condition of Grid

Grid	Grid Opening	Number of structures Primary	Number of structures Total	Class	Type of Structure	Width mm	Length mm	Comments
	F41							
	F44							
	G41							
	G44							
	H41							
	H44							
	B46							
	C43							
	C46							
	E43							
	E46							
	F43							
	F46							
	G43							
	G46							
	F56							
C	E21							
	E24							
	F21							
	B26							
	C23							
	C26							
	F23							
	E26							
	F23							
	F26							
	G23							
	G26							
	H23							
	B33							
	B36							
	C33							

TEM-10A (2002)

Count (Page 4 of) NIOSH 7402/ISO

Report number :	137822	Filter Blank2	Filter Type: MCE 385 mm2	Prep Time: NA
Sample number:	00105200		Date Sample was Run: NA	
File name:	Northgate			
Sample Description:	NA	mg	Magnification: 9,200 X	

Preparation date: 6/8/2010 By JAP Grid opening dimension:0.0094 mm^2

Analysis date: By Level of Analysis: (C): CD, CDX

(A): ADX, ADQ

Grid loading Condition of Grid

Grid	Grid Opening	Number of structures Primary	Number of structures Total	Class	Type of Structure	Width mm	Length mm	Comments
	C36							
	E33							
	E36							
	F33							
	F66							
	G33							
	G36							
	H33							
	H36							
	K33							
	B43							Org
	B46							
	C43							
	C46							
	E43							
	E46							
	F43							
	F46							
	G43							
	G46							
	H43							
	H46							
	K43							
	C52							
	C56							
D	E21							
	E24							
	F21							
	B34							
	C31							
	C34							
	E31							

TEM -10A (2002)

Count (Page of) NIOSH 7402/ISO

Report number : 137822 Filter Blank2
Sample number: 00105200
File name: Northgate
Sample Description: NA mg

Filter Type: MCE 385 mm2 Prep Time: NA
Date Sample was Run: NA

Magnification: 9,200 X

Preparation date: 6/8/2010 By JAP
Analysis date: By

Grid opening dimension:0.0094 mm^2
Level of Analysis: (C): CD, CDX

(A): ADX, ADQ

Grid loading Condition of Grid

Grid	Grid Opening	Number of structures Primary	Number of structures Total	Class	Type of Structure	Width mm	Length mm	Comments
	E34							
	E51							
	E54							
	G31							
	G34							
	H31							
	H34							
	B44							
	E41							
	E44							
	F41							
	F44							
	G41							
	G44							
	H41							
	H44							
	K41							
	K44							
	B54							
	C51							
	C54							
	E51							
	C54							
	F51							
	F54							
	B56							
	C53							
	C56							
	E53							
	E56							
	F53							
	F56							

TEM-10A (2002)

Count (Page 1 of) NIOSH 7402/ISO

Report number : 137822 Filter Blank1
Sample number: 00105200
File name: Northgate
Sample Description: NA mg

Filter Type: MCE 385 mm2 Prep Time: NA
Date Sample was Run: NA

Magnification: 9,200 X

Preparation date: 6/8/2010 By JAP
Analysis date: By

Grid opening dimension:0.0094 mm^2
Level of Analysis: (C): CD, CDX

(A): ADX, ADQ

Grid loading Condition of Grid

Grid	Grid Opening	Number of structures Primary	Number of structures Total	Class	Type of Structure	Width mm	Length mm	Comments
6	G23							
	C26							
	E23							
	E26							
	F23							
	F26							
	G23							
	G26							
	H23							
	H26							
	B36							
	C33							
	C36							
	E33							
	E36							
	F33							
	F36							
	G33							
	B41							
K	G46							
	E43							
	E46							
	F43							
	F46							
	G43							
	G46							
	H43							
	H46							
	K43							
	E56							
	F53							
	F56							

TEM -10A (2002)

Count (Page of) NIOSH 7402/ISO

Report number : 137822 Filter Blank2
Sample number: 00105200
File name: Northgate
Sample Description: NA mg

Filter Type: MCE 385 mm2 Prep Time: NA
Date Sample was Run: NA
Magnification: 9,200 X

Preparation date: 6/8/2010 By JAP
Analysis date: By
Grid loading Condition of Grid

Grid opening dimension:0.0094 mm^2
Level of Analysis: (C): CD, CDX
(A): ADX, ADQ

Grid	Grid Opening	Number of structures Primary	Number of structures Total	Class	Type of Structure	Width mm	Length mm	Comments
	C53							
	C56							
	H53							
	H56							
	K57							
	C64							
	E61							
	E64							
	F61							
	F64							

TEM -10A (2002)

Spot Size Measurements

Scope: #60B

Date: May 2010

Name: RS

Conditions of Measurements

High Voltage: 100K

Beam Current: 10 μA

Magnification: 19,260

Condenser Aperture Size: #2

Measurements from a photo 8.5

Shortest diameter: 8.1 **mm**

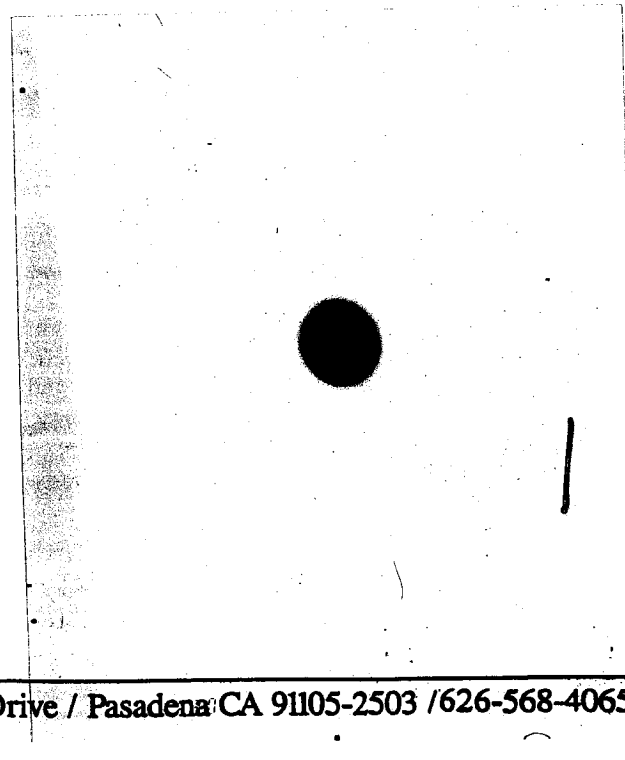
Longest diameter: 9 **mm**

Average: 8.75 **mm**

Spot Size Calculation

$$\text{Spot size in } \mu m = \frac{(\text{average spot size in mm}) \times 1000\ \mu m \times 0.4125}{\text{Magnification}}$$ 188

Note: 1.65/4 = 0.4125 (see the Hitachi Fax)



TEM CAMERA CONSTANT DETERMINATION

TEM H6nB

Measured and Calculated by RJ Date May 2010

Camera Constant (mm A) = D (mm) X 1/2 X d (A)

where D (mm) is the diameter of a gold ring and

d (A) is the d-spacing in Angstroms for a particular reflection

CC (1*) = (24.1 mm) X 1/2 x 2.355 = 28.37

CC (2*) = (27.8 mm) X 1/2 x 2.039 = 28.34

CC (3*) = (39.3 mm) X 1/2 x 1.442 = 28.34

CC (4*) = (45.9 mm) X 1/2 x 1.230 = 28.23

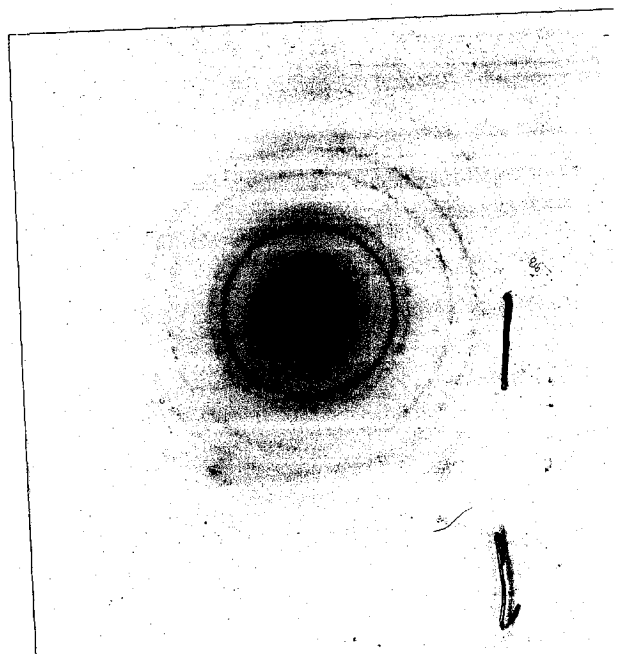
Average Camera Constant = 28.3

* 1 is the first largest diameter ring. 2 the second, etc.

Average Camera Constant = (CC<1> = ...= CC<n>) X 1/n

For gold:

d(A)	nk1
2.355	(111)
2.039	(200)
1.442	(220)
1.230	(311)
1.1774	(222)



08/07/01
csl

DATE: May 2010 A-600/B-600/C-600

WEEKLY CALIBRATION 3mo

MONTHLY CALIBRATION 3mth

AFTER SERVICE CALIBRATION___

BY: R

Measurement	Number of Spacing Flourescent Screen Magnification	Distance (mm)	Number of Spacing Film Magnification
	25,000x	12,000x	
1	53 5/16 – 19,260	5 1/2 –	9180
2	53 5/16 – 19,260	5 1/2 –	9270
3	53 1/6 – 19,080	5 1/2 –	9270
4	53 1/6 – 19,080	5 1/2 –	9180
5	53 5/16 – 19,260	5 1/2 –	9180
6		5 1/2 –	9180
7	ave 19,200		
8		ave	9200
9			
10			
	AVERAGE:		

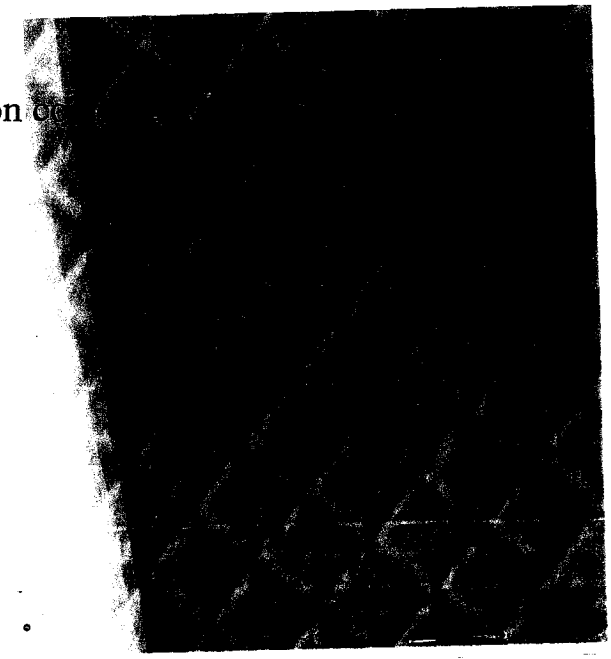
OPERATING VOLTAGE 10 KV

54, 864 lines/inch or 2,160 lines/mm or 0.463μm/line

28, 800 lines/inch or 1,134 lines/mm or 0.882μm/line

15, 240 lines/inch or 600 lines/mm or 1.67μm/line

16.94 μm for one bar and one opening for Ni screen on



EM CALIBRATION 2
992)

K= [Cn/C(Si)] / [In/I(Si)]
C(Si)= 18.74

n	Cn	RUN 1 I(Si)= 22860 In	Kn	RUN 2 I(Si)= 12101 In	Kn	RUN 3 I(Si)= 15953 In	Kn	RUN 4 I(Si)= 16554 In	Kn	RUN 5 I(Si)= 16203 In	Kn	RUN 6 I(Si)= 7464 In	Kn
Na	1.81	1694	1.3034	1095	1.0674	986	1.5627	1133	1.4112	1004	1.5587	395	1.8251
Mg	7.57	6992	1.3207	3738	1.3077	4447	1.4491	4902	1.3641	4714	1.3885	1983	1.5205
Al	6.54	7768	1.027	4152	1.0171	5455	1.0206	5761	1.0028	5708	0.9906	2576	1.0112
Si	18.74	22860	1	12101	1	15953	1	16554	1	16203	1	7464	1
K	0.97	1453	0.8144	827	0.7574	1311	0.6299	1333	0.6428	1195	0.7018	584	0.6615
Ca	8.26	6570	1.5336	3406	1.566	5845	1.203	5222	1.3973	4998	1.4289	2852	1.1535
Ti	3.02	2235	1.6483	1170	1.6668	1821	1.4118	1867	1.4289	1753	1.4895	928	1.2962
Mn	0.14	10	17.078	22	4.1092	12	9.9316	29	4.2645	2	60.523	22	2.5346
Fe	9.51	5898	1.9669	2935	2.0923	4934	1.6408	4856	1.73	4473	1.8383	2351	1.6111
O	43.83			7849	3.6059	7051	5.2917	10526	3.6783	9433	4.0174	3333	5.2377

** NVLAP REQUIREMENTS **
1.0 < K(Na) wrt Si < 4.0
1.0 < K(Mg) & K(Fe) wrt Si < 2.0
1.0 < K(Al) & K(Ca) wrt Si < 1.75

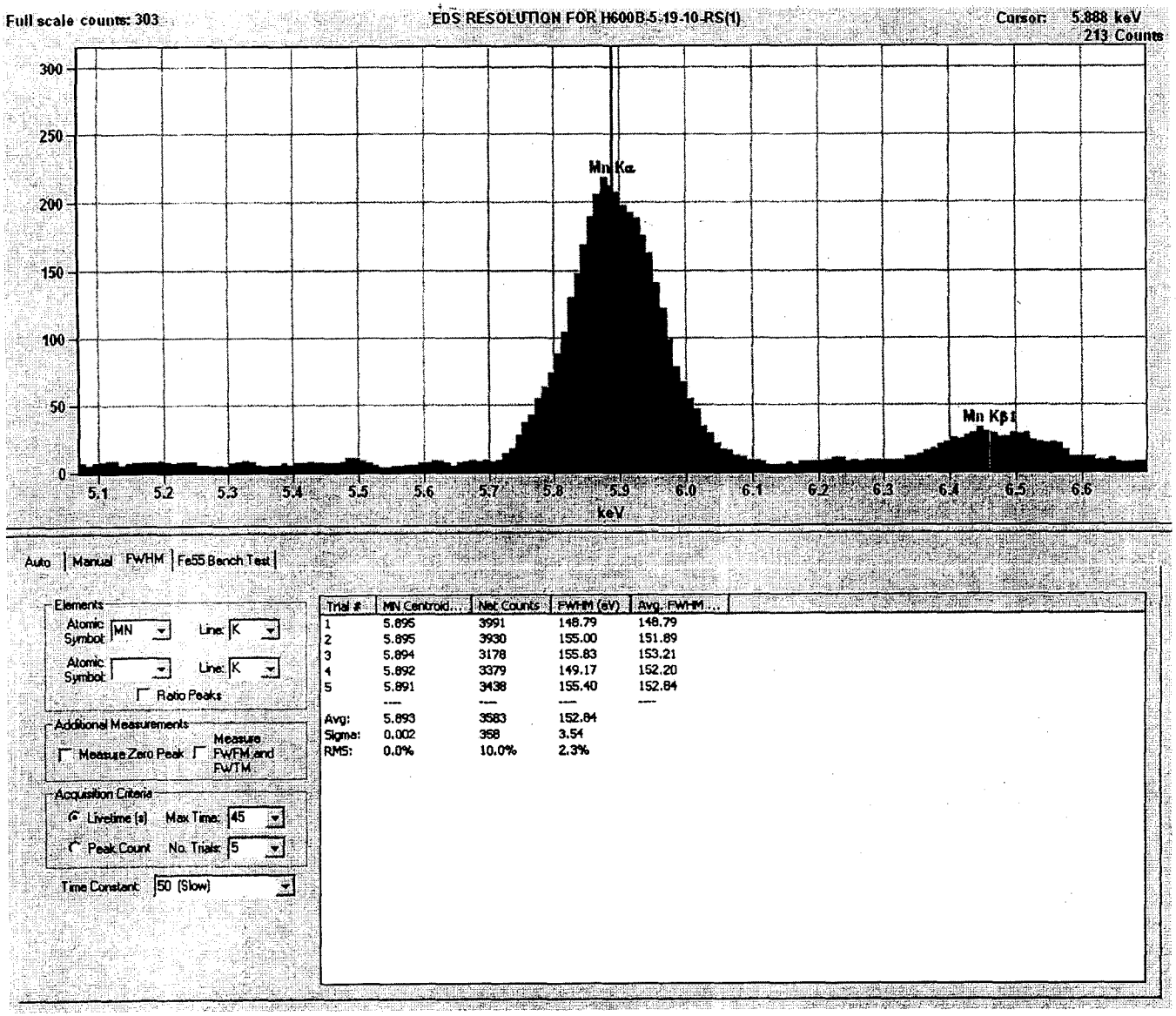
K(Mg)/K(Fe) < 1.5

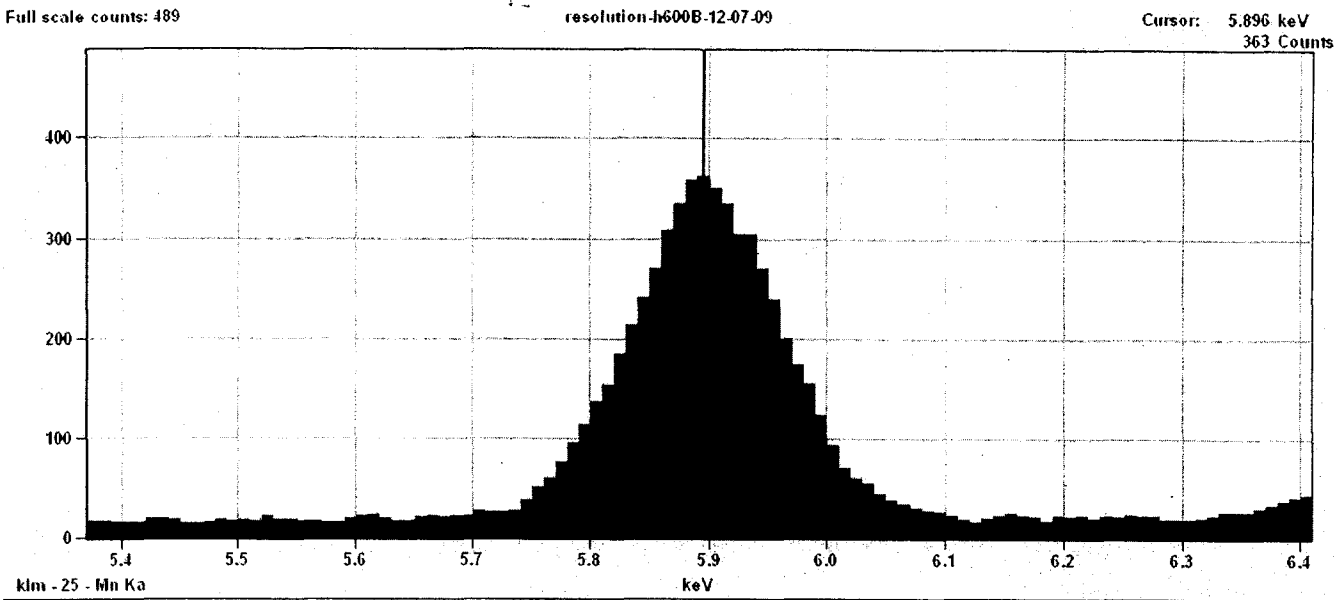
stdev <10% for Mg, Al, Si, Fe
stdev <20% for Na
wrt mean value of k-factor wrt Si

SCOPE B

RUN 7		RUN 8		RUN 9		RUN 10		RUN 11		RUN 12		RUN 13	
I(Si)=	12627	I(Si)=	4491	I(Si)=	15830	I(Si)=	14684	I(Si)=	25368	I(Si)=	25374	I(Si)=	4628
In	Kn	In	Kn	In	Kn	In	Kn	In	Kn	In	Kn	In	Kn
849	1.4365			950	1.6094	982	1.4442	1543	1.5879	1542	1.5893		
3523	1.4478	1332	1.362	4331	1.4765	4325	1.3715	7480	1.37	7479	1.3705	1213	1.5412
4458	0.9885	1569	0.9989	5717	0.9663	5043	1.0162	9260	0.9561	9260	0.9563	1556	1.038
12627	1	4491	1	15830	1	14684	1	25368	1	25374	1	4628	1
1099	0.5947	415	0.5601	1505	0.5444	1185	0.6414	2315	0.5672	2318	0.5666	363	0.6599
4553	1.2224	1818	1.0888	6257	1.1151	4602	1.4064	9813	1.1394	9832	1.1375	1754	1.163
1480	1.3749	563	1.2855	1994	1.2794	1703	1.3895	3188	1.2823	3196	1.2794	510	1.4624
4	23.583	13	2.5808	7	16.894			25	7.5806			6	5.7624
3889	1.6477	1422	1.6027	5899	1.3618	4371	1.7048	8840	1.4563	8884	1.4494	1497	1.5689
6102	4.8398	1894	5.5458	5950	6.2225	9471	3.6262	35609	1.6662	13315	4.4571	2045	5.293

SCOPE B


Full scale counts: 303
EDS RESOLUTION FOR H600B-5-19-10-RS(1)
Cursor: 5.888 keV
213 Counts
300
250
200
150
100
50
0
Mn Kα
Mn Kβ1
5.1
5.2
5.3
5.4
5.5
5.6
5.7
5.8
5.9
6.0
6.1
6.2
6.3
6.4
6.5
6.6
keV
Auto
Manual
FWHM
Fe55 Bench Test
Elements
Atomic Symbol: MN
Line: K
Atomic Symbol:
Line: K
Ratio Peaks
Additional Measurements
Measure Zero Peak
Measure FWFM and FWTM
Acquisition Criteria
Livetime [s]
Max Time: 45
Peak Count
No. Trials: 5
Time Constant: 50 (Slow)
Trial # | MN Centroid... | Net Counts | FWHM (eV) | Avg. FWHM...
1 | 5.895 | 3991 | 148.79 | 148.79
2 | 5.895 | 3930 | 155.00 | 151.89
3 | 5.894 | 3178 | 155.83 | 153.21
4 | 5.892 | 3379 | 149.17 | 152.20
5	5.891	3438	155.40	152.84
Avg:	5.893	3583	152.84
Sigma:	0.002	358	3.54
RMS:	0.0%	10.0%	2.3%



Auto | Manual | FWHM | Fe55 Bench Test

Elements

Atomic Symbol: Mn Line: K

Atomic Symbol: Line: K

Ratio Peaks

Additional Measurements

Measure Zero Peak Measure FWFM and FWTM

Acquisition Criteria

Livetime (s) Max Time: 50

Peak Count No. Trials: 5

Time Constant: 50 (Slow)

Trial #	Mn Centroid ...	Net Counts	FWHM (eV)	Avg. FWHM ...
1	5.896	1277	126.16	126.16
2	5.900	5295	151.73	138.95
3	5.897	6460	146.02	141.30
4	5.898	5560	146.26	142.54
5	5.899	5291	133.62	140.76
	----	----	----	----
Avg:	5.898	4776	140.76	
Sigma:	0.001	2014	10.52	
RMS:	0.0%	42.2%	7.5%	

137821

Laboratory Submittal Form

Date:		Time:	Relinquished by:
Client:	Northgate		Date of Shipment:
Address:	1100 Quail Street, Suite 102		Shipped from: Carrier:
	Newport Beach, CA 92660		Client P.O. No: 2027.01
Telephone:	949-260-9293		Client Project ID: COC# 02027.01.2126
Contact:	Derrick Willis		TRONOX LLC, Henderson
Results via:	☐ Fax No:		☑ Email address: Derrick.Willis@ngem.com ☐ Verbal

(Complete written reports will follow all analyses, in addition to any prior verbal, fax, or email results)

Turnaround Time:	STD		Sample Preservatives:
Number of Samples:	10 (3 each)		Sampler's Name:
Date & Time of Sample Collection:	5-12-10		Holding Times: Signature:
Type:	☐ Water ☐ Waste Water ☐ Soil		☐ Filter ☐ Impinger ☐ Sorbent Tube ☐ Other

EMS Only	Client Sample No	Description/Location	Analysis	Volume/Weight
1	SSAP8-01-0.00BPC			
2	SSAP8-01-0.00BPC_FD			
3	SSAP8-01-0.33BPC			
4	SSAN7-03-0.33BPC			
5	SSAN7-03-0.00BPC_FD			
6	SSAN7-03-0.00BPC			
7	SSAN5-02-0.00BPC	SEE ATTACHMENT		
8	SSAN5-02-0.33BPC			
9	SSAK5-03-0.00BPC			
10	SSAK5-03-0.33BPC			
11				
12	EDD send to: Frank.Hagar@ngem.com			
13				
14				
15				
16				
17				

137821

For EMS Only			
Laboratory Number:		Received by:	Time: 10:05
Date of Package Delivery:	5/19/2010	Shipping Bill Retained?	yes
Condition of Package on Receipt:	OK	Condition of Custody Seal:	NONE
Number of Samples:	10	Chain of Custody Signature:	
Disposition of Samples:	EMS LABS	Misc. Info:	SF 7/06

137821 Revised

northgate
environmental management, inc.

1100 Quail Street, Suite 102
Newport Beach, CA 92660 (949) 260-9293

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate.

Page: 1 of 1
Cooler # of

COC # 02027.01.2126 Revised 2010-05-25

Total # of Samples: 10 Event Complete?

Regular | Rush | X | Mark One

Required Ship to Lab:

Lab Name: EMS Laboratories, Inc.
Address: 117 W Bellvue Dr
Pasadena, CA 91105
Lab PM: Tony Kolk
Phone/Fax: 626-568-4065
Lab PM email: akolk@emslabs.com
Applicable Lab Quote #:

Required Project Information:

Site ID #: TRONOX LLC. HENDERSON
Project #: 2027.01
Site Address: 560 W Lake Mead Drive
City: Henderson State, Zip: NV, 89015
Site PM Name: Derrick Willis
Phone/Fax: (949)375-7004
Site PM Email: derrick.willis@ngem.com

Required Invoice Information:

Send Invoice to:
Address: PO Box 55
City/State: Henderson, NV 89009 Phone #: (949) 260-9293
PO #:
Send EDD to: Frank.Hagan@ngem.com
CC Hardcopy report to: PDF Electronic Version Only – FTP Upload
CC Hardcopy report to:

ITEM #	SAMPLE ID Samples IDs MUST BE UNIQUE	SAMPLE LOCATION	MATRIX CODE	G=GRAB C=COMP	SAMPLE TYPE	SAMPLE DATE	SAMPLE TIME	#OF CONTAINERS	Comments/Lab Sample I.D.	Analysis: Preservative: Filtered	PhB-Asbestos	UNPRES	N
1	SSAP8-01-0.00BPC	SSAP8-01	SO	C	N	05/12/2010	13:05	3			X		
2	SSAP8-01-0.00BPC_FD	SSAP8-01	SO	C	FD	05/12/2010	13:05	3			X		
3	SSAP8-01-0.33BPC	SSAP8-01	SO	C	N	05/12/2010	13:20	3	**Hold**		**H**		
4	SSAN7-03-0.33BPC	SSAN7-03	SO	C	N	05/12/2010	12:26	3	**Hold**		**H**		
5	SSAN7-03-0.00BPC_FD	SSAN7-03	SO	C	FD	05/12/2010	12:15	3			X		
6	SSAN7-03-0.00BPC	SSAN7-03	SO	C	N	05/12/2010	12:15	3			X		
7	SSAN5-02-0.00BPC	SSAN5-02	SO	C	N	05/12/2010	09:10	3			X		
8	SSAN5-02-0.33BPC	SSAN5-02	SO	C	N	05/12/2010	09:22	3	**Hold**		**H**		
9	SSAK5-03-0.00BPC	SSAK5-03	SO	C	N	05/12/2010	08:20	3			X		
10	SSAK5-03-0.33BPC	SSAK5-03	SO	C	N	05/12/2010	08:29	3	**Hold**		**H**		

Additional Comments/Special Instructions:

Modification by Joni Fisher NGEM; modifications shown in bold font

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME

SHIPPING INFO
Company:
Tracking #:

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: Francisco Barron
SIGNATURE of SAMPLER:
DATE Signed
Time:

Sample Receipt Conditions

	Temp in OC	Samples on Ice?	Sample intact?	Trip Blank?
		Y / N	Y / N	Y / N
		Y / N	Y / N	Y / N
		Y / N	Y / N	Y / N
		Y / N	Y / N	Y / N

Northgate environmental management, inc.
1100 Quail Street, Suite 102
Newport Beach, CA 92660 (949) 260-9293

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed and accurate

137821

Page: 1
Cooler #

COC # 02027.01.2126
Total # of Samples: 10
Event Complete?

Regular		Rush	X	Mark One

Required Ship to Lab:

Lab Name:	EMS Laboratories, Inc.
Address:	117 W Bellvue Dr
	Pasadena, CA 91105
Lab PM:	Tony Kolk
Phone/Fax:	626-568-4065
Lab PM email	akolk@emslabs.com
Applicable Lab Quote #:	

Required Project Information:

Site ID #:	TRONOX LLC. HENDERSON
Project #	2027.01
Site Address	560 W Lake Mead Drive
City	Henderson
State, Zip	NV, 89015
Site PM Name	Derrick Willis
Phone/Fax:	(949)375-7004
Site PM Email:	derrick.willis@ngem.com

Required Invoice Information:

Send Invoice to:	
Address:	PO Box 55
City/State.	Henderson, NV 89009
Phone #:	(949) 260-9293
PO #	
Send EDD to	Frank.Hagar@ngem.com
CC Hardcopy report to	PDF Electronic Version Only – FTP Upload
CC Hardcopy report to	

Filtered: N
Preservative: UNPRES

ITEM #	SAMPLE ID Samples IDs MUST BE UNIQUE	SAMPLE LOCATION	MATRIX CODE	G=GRAB C=COMP	SAMPLE TYPE	SAMPLE DATE	SAMPLE TIME	#OF CONTAINERS	Comments/Lab Sample I.D.	Analysis: PhB-Asbestos
1	SSAP8-01-0.00BPC	SSAP8-01	SO	C	N	05/12/2010	13:05	3		X
2	SSAP8-01-0.00BPC_FD	SSAP8-01	SO	C	FD	05/12/2010	13:05	3		X
3	SSAP8-01-0.33BPC	SSAP8-01	SO	C	N	05/12/2010	13:20	3		X
4	SSAN7-03-0.33BPC	SSAN7-03	SO	C	N	05/12/2010	12:26	3		X
5	SSAN7-03-0.00BPC_FD	SSAN7-03	SO	C	FD	05/12/2010	12:15	3		X
6	SSAN7-03-0.00BPC	SSAN7-03	SO	C	N	05/12/2010	12:15	3		X
7	SSAN5-02-0.00BPC	SSAN5-02	SO	C	N	05/12/2010	09:10	3		X
8	SSAN5-02-0.33BPC	SSAN5-02	SO	C	N	05/12/2010	09:22	3		X
9	SSAK5-03-0.00BPC	SSAK5-03	SO	C	N	05/12/2010	08:20	3		X
10	SSAK5-03-0.33BPC	SSAK5-03	SO	C	N	05/12/2010	08:29	3		X

Additional Comments/Special Instructions:

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Francisco Barron	05/12/10	15:06	[signature] SGS	5/12/10	1506
[signature] SGS	5/12	1506	[signature]	5/13/10	10:05

Sample Receipt Conditions			
Temp in OC	Samples on Ice?	Sample intact?	Trip Blank?
	Y/N	Y/N	Y/N
	Y/(N)	(Y)/N	Y/N
	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N

SHIPPING INFO
Company:
Tracking #:

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: Francisco Barron
SIGNATURE of SAMPLER: Francisco Barron
DATE Signed: 05/12/10
Time: 15:06